

# Service Manual

ORDER NO. VMD0109026C8

# Service Manual

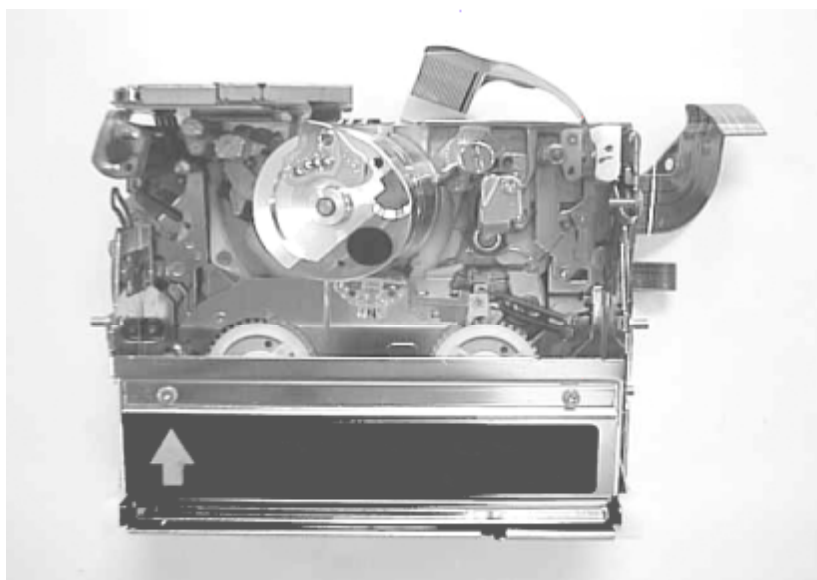
Digital Video Camera/Recorder

**Panasonic** Mini DV

- Q-MECHANISM

(Including Q1, Q2&Q3)

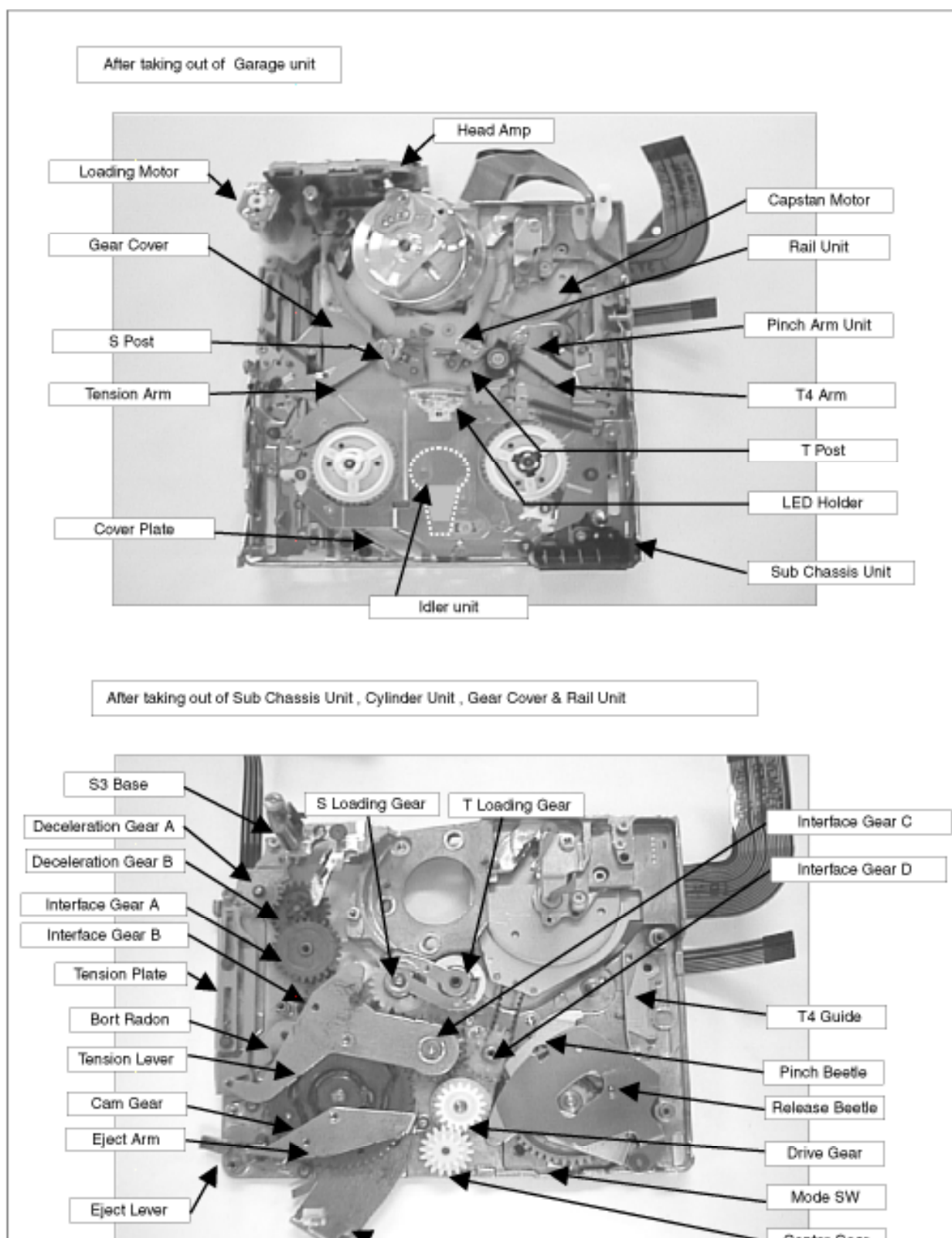
*Disassembly/Assembly  
Procedures  
Adjustment Procedures*



**Panasonic**

# 1.1 UPPER SIDE

[TOP](#) [PREVIOUS](#) [NEXT](#)

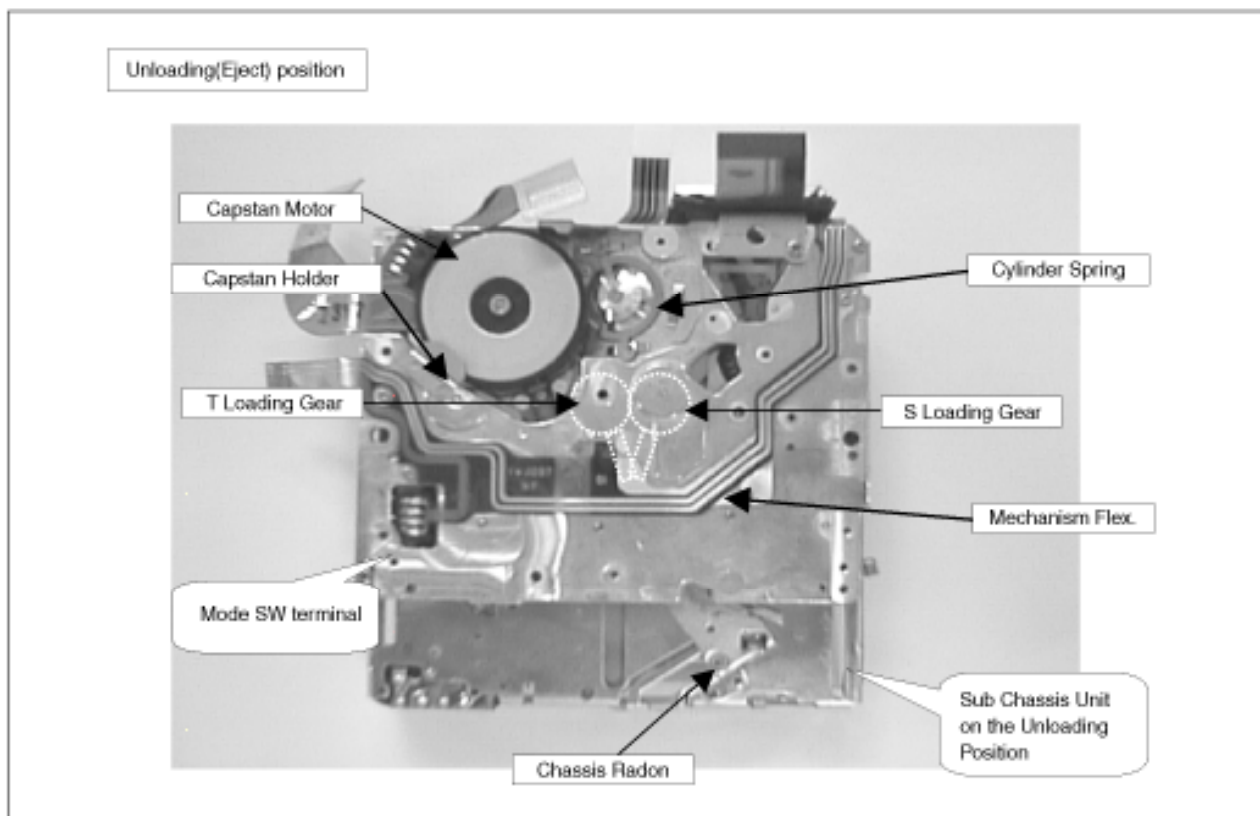




[TOP](#) [PREVIOUS](#) [NEXT](#)

## 1.2 BOTTOM SIDE

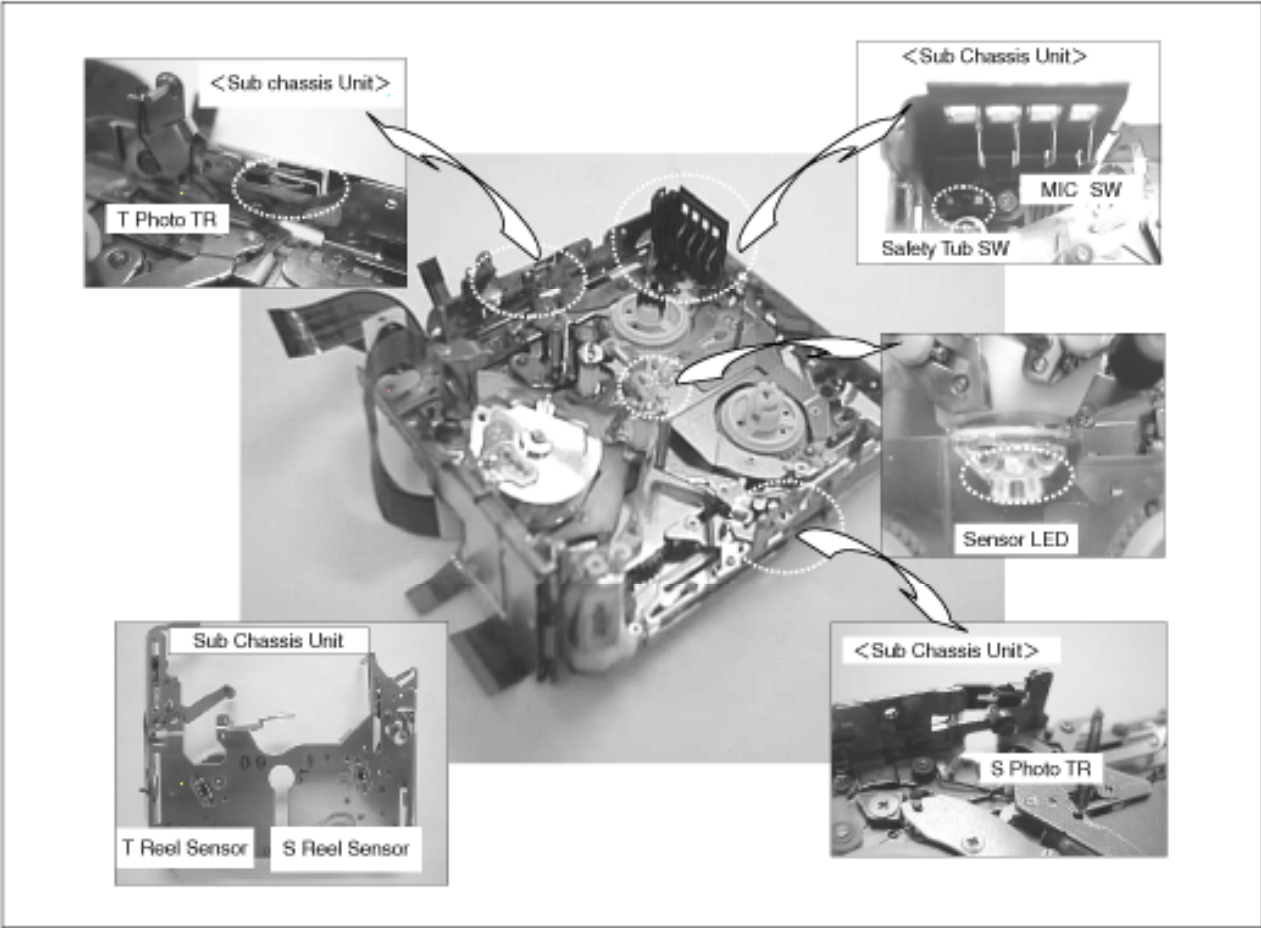
[TOP](#) [PREVIOUS](#) [NEXT](#)



[TOP](#) [PREVIOUS](#) [NEXT](#)

# 1.3 SENSOR POSITION

[TOP](#) [PREVIOUS](#) [NEXT](#)

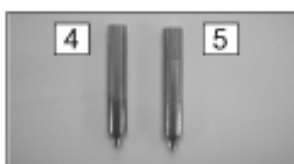
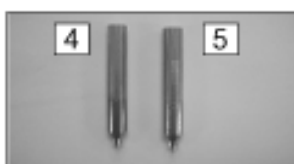


[TOP](#) [PREVIOUS](#) [NEXT](#)

## 2.1 FIXTURES& TOOLS FOR DISASSEMBLY& ASSEMBLY

[TOP](#) [PREVIOUS](#) [NEXT](#)

No.	Parts number	Parts Name	Q'ty	New	Remarks
1	VFK1390	Precision Driver	1	•	
2	VFK1444	Gear Driver	1	•	
3	VFK1444Q2	Gear Driver for Q2 & Q3mecha.	1	•	
4	VFK1650	Cut Washer Jig(0.86)	1	•	
5	VFK1649	Cut Washer Jig(0.65)	1	•	
6	VFK1024	Molytone Grease	1	•	

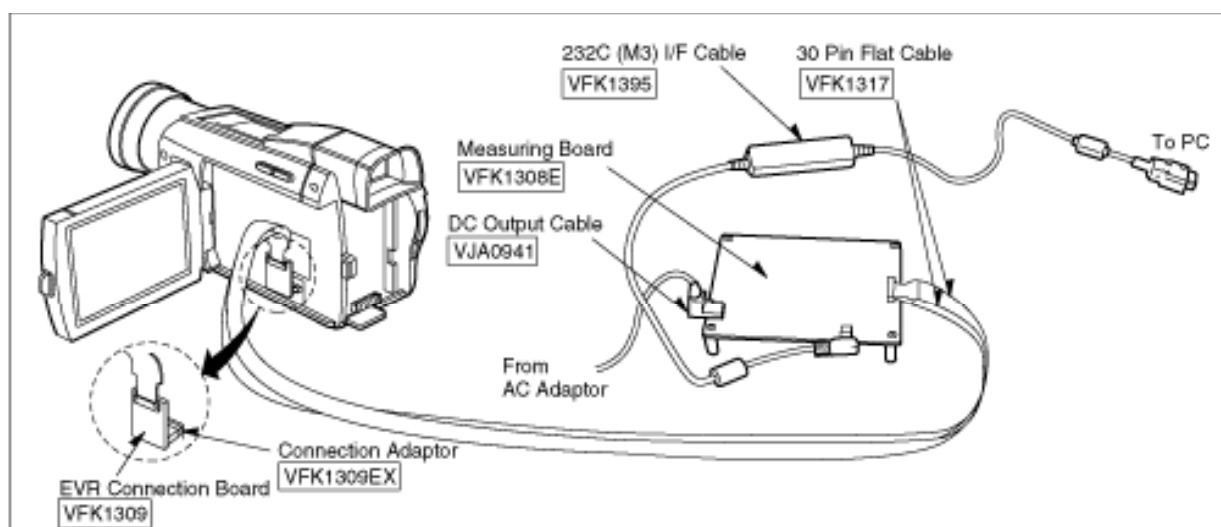
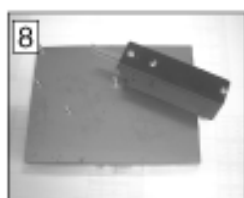


[TOP](#) [PREVIOUS](#) [NEXT](#)

## 2.2 FIXTURES&TOOLS FOR MECHANICAL ADJUSTMENT

[TOP](#) [PREVIOUS](#) [NEXT](#)

No.	Parts number	Parts Name	Q'ty	New	Remarks
7	VFK1278	Post Adjustment Driver	1	•	
8	VFK1638	Capstan Tilt Adj. Jig	1	•	
9	VFK1641	Envelope Detecor Board	1	•	
10	VFM3110EDS(PAL)	DV Alignment Tape	1	--	or VFM3010EDS(NTSC)
11	VFK1395	232C(M3) I/F Cable	1	--	"TATSUJIN" system
12	VFK1308E	Measuring Board	1	--	"TATSUJIN" system
13	VFK1309	EVR Connecor Board	1	--	"TATSUJIN" system
14	VFK1309EX	Connection Adaptor		--	"TATSUJIN" system
15	VFK1317	30pin Flat Cable	2	--	or VFK1517(New - 300mm) "TATSUJIN" system
16	VJA0941	DC Output Cable	1	--	"TATSUJIN" system



## 2.3 MAINTENANCE FOR CAPSTAN TILT ADJUSTMENT JIG.

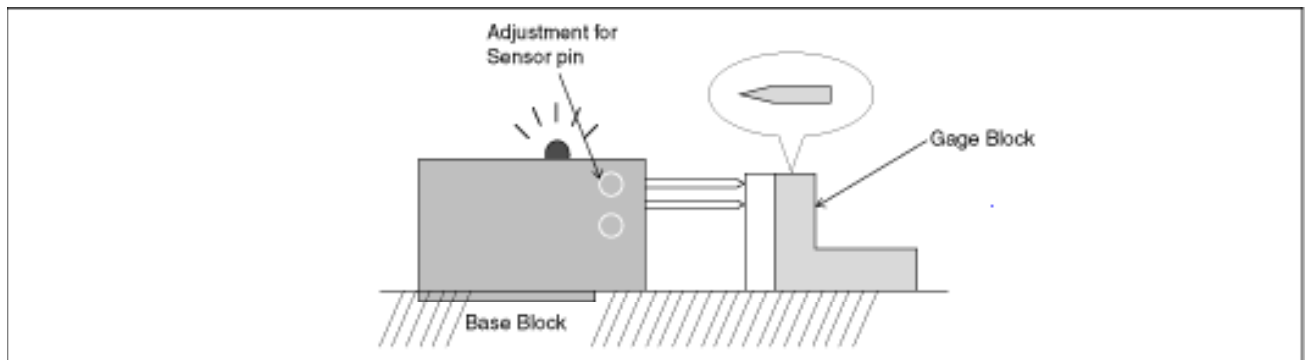
[TOP](#) [PREVIOUS](#) [NEXT](#)

1. Keep applying oil for preventive oxidation on base block.

Glove should be used when you apply oil.

2. Do not apply pressure to this jig.
3. If Brightness of LED become weak, Battery (SUM4 X 2) in the top of box should be changed.
4. Inspect sensor pin regularly as following.
  - A. Put Gage Block to sensor pin.
  - B. Confirm LED is lit.

If not, adjust sensor pin by rotating a screw.

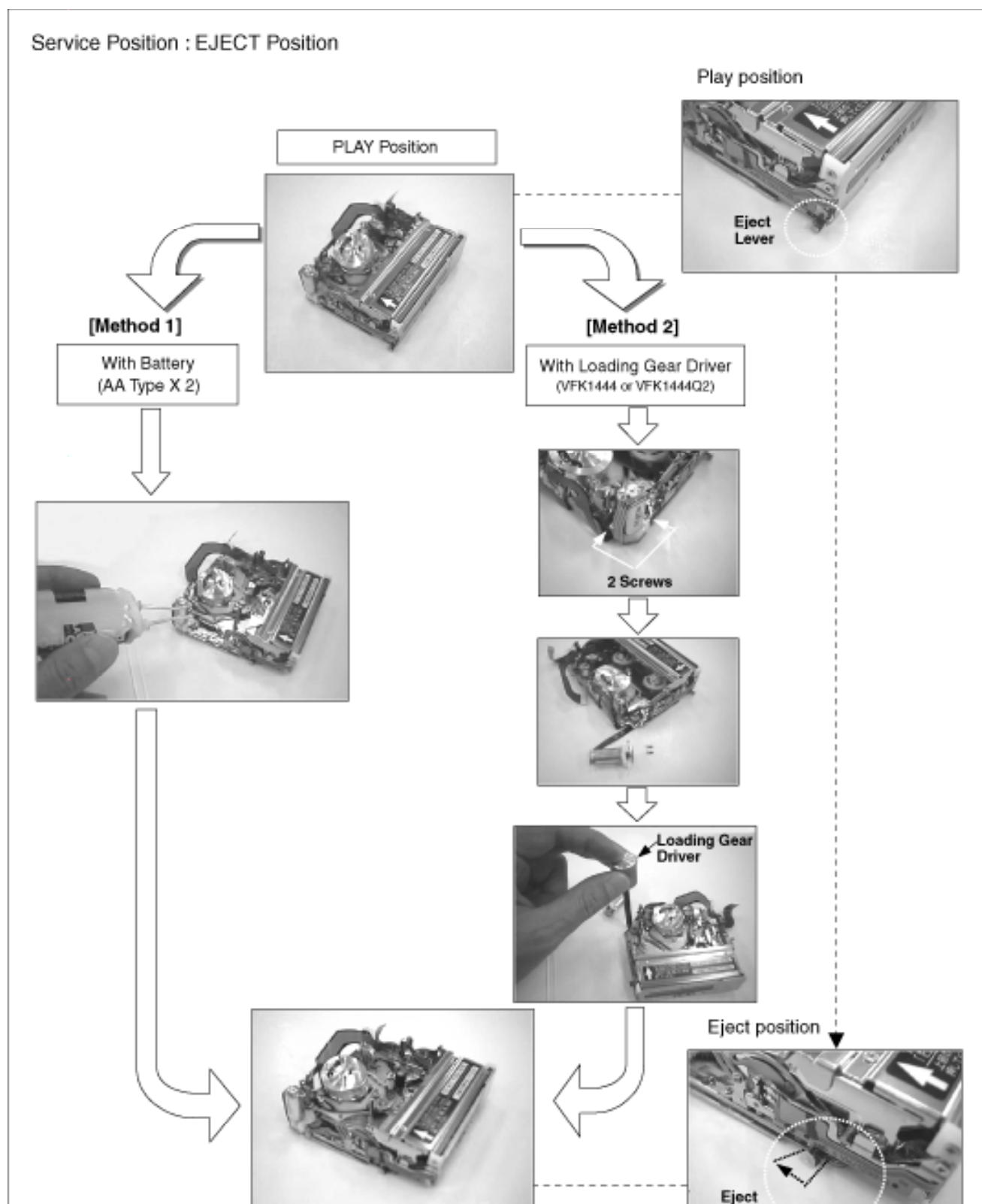


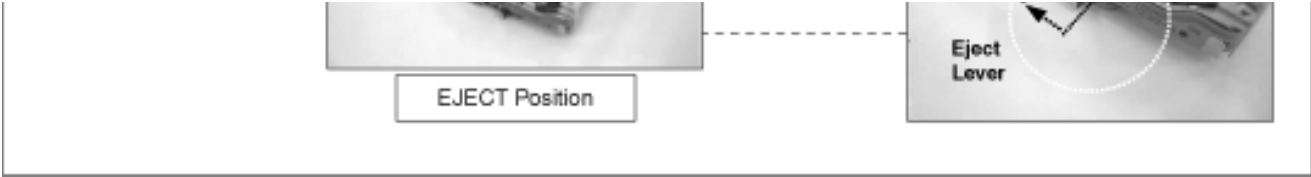
[TOP](#) [PREVIOUS](#) [NEXT](#)



# 3.1 PREPARATION FOR DISASSEMBLY

[TOP](#) [PREVIOUS](#) [NEXT](#)





[TOP](#) [PREVIOUS](#) [NEXT](#)

## 3.2 DISASSEMBLY PROCEDURE

[TOP](#) [PREVIOUS](#) [NEXT](#)

No.	Item	Fig.	Procedure
1	Cassette Up Unit.	<a href="#">Fig. D1-1</a>	1) Remove 3 screws. (Q1 &2 have 4 screws)
		<a href="#">Fig. D1-2</a>	2) Take coupling portion off from both S &T sides.
*2	H Amp Unit./(Only Q1 & Q2)	<a href="#">Fig. D2-1</a>	1) Remove a screw from Shield case.
		<a href="#">Fig. D2-2</a>	2) Take Cylinder Flex. From connector.
		<a href="#">Fig. D2-3</a>	3) Remove a screw from H Amp Angle.
3	Cylinder Unit & RT Flex. Flame.	<a href="#">Fig. D3-1</a>	1) Remove a screw from RT Flex. Flame.
		<a href="#">Fig. D3-2</a>	2) Remove 3 screws and then take Cylinder Spring out.
		<a href="#">Fig. D3-3</a>	3) Remove a screw and take RT Flex. Flame out.
4	LED Holder, Cover plate & Idler U.	<a href="#">Fig. D4-1</a>	1) Pull up and remove LED Holder.
		<a href="#">Fig. D4-2</a>	2) Move LED Flat Cable out of position and unhook 2 springs.
		<a href="#">Fig. D4-3</a>	3) Remove 5 screws and remove Cover Plate & Idler U.
5	Sub Chassis Unit	<a href="#">Fig. D5-1</a>	1) Remove 4 screws.
		<a href="#">Fig. D5-2</a>	2) Remove a screw and unhook a spring from Pinch Arm.
6	Pinch Arm & Center Gear	<a href="#">Fig. D6-1</a>	1) Remove Cut Washer and take Pinch Arm out. 2) Take Center Gear out.
		<a href="#">Fig. D6-2</a>	3) Take Center Gear Spacer out.
7	Rail Unit	<a href="#">Fig. D7-1</a>	1) Make half loading until / Connection Arm comes out.
		<a href="#">Fig. D7-2</a>	2) Disconnect Connection Arms. a) Hold Loading Gear side. b) Disconnect connection arms.
		<a href="#">Fig. D7-3</a>	3) Remove 4 screws.
8	T-Loading Gear & S-Loading Gear	<a href="#">Fig. D8</a>	1) Take T-Loading Gear out. 2) Remove Cut Washer on S-Loading Gear and take S-Loading Gear out. * Removed Cut Washer can not be used again.
9	Gear Cover	<a href="#">Fig. D9</a>	1) Remove a screw and slide Gear Cover to take out.
10	Pinch Beetle & Release Beetle	<a href="#">Fig. D10</a>	1) Remove a washer and take Pinch Beetle and Release Beetle out together.
11	Tension Lever & Eject Arm.	<a href="#">Fig. D11</a>	1) Remove a screw and take Tension Lever out. 2) Remove a washer and take Eject Arm out.
12	Interface Gears	<a href="#">Fig. D12</a>	1) Remove 4 Gears.
13	Cam Gear	<a href="#">Fig. D13</a>	1) Remove Cam Gear.

14	Chassis Radon	<a href="#">Fig. D14</a>	1) Remove a washer.
15	Boat Radon	<a href="#">Fig. D15</a>	1) Remove Boat radon.
16	Drive Gear	<a href="#">Fig. D16</a>	1) Remove Drive Gear and a White Waher underneath.
17	Capstan Holder & Capstan Motor	<a href="#">Fig. D17-1</a>	1) Remove 2 screws and take Capstan Holder out. * It is not necessary to remove 2 screws for New Capstan Holder. Because it shapos screw.
		<a href="#">Fig. D17-2</a>	2) Remove 3 screws and take Capstan Motor out downword.
18	Loading Motor unit & Mechanism Interface Flex.	<a href="#">Fig. D18-1</a>	1) Remove 2 screws and take Loading Motor Unit out.
		<a href="#">Fig. D18-2</a>	2) Remove 4 screws and dissolder at Mode Sw.
*19	Mode Switch , Deceleration Gears & Tension Plate.	<a href="#">Fig. D19</a>	1) Take Mode Sw out. 2) Remove a washer and take Deceleration Gear (A) out. 3) Take Deceleration Gear (B) out. 4) Remove 2 washers and take Tension Plate.
*20	T4 Guide , Eject Lever , Pulley Cover & Pulley.	<a href="#">Fig. D20-1</a>	1) Remove a screw and take T4 Guide out.
		<a href="#">Fig. D20-2</a>	2) Remove a washer and take Eject Lever out.
		<a href="#">Fig. D20-3</a>	3) Remove 2 screw and take Pulley Cover out. 4) Take Pulley out.
*21	S3 Base U.	<a href="#">Fig. D21</a>	1) Remove a screw for S3 adjustment and take S3 Base U.

\* 1) Procedure 2 for H.Amp Unit is applied only Q1 & Q2 / mechanism. 2) Procedure 19 - 21 can be changed in order.

Fig. D1-1

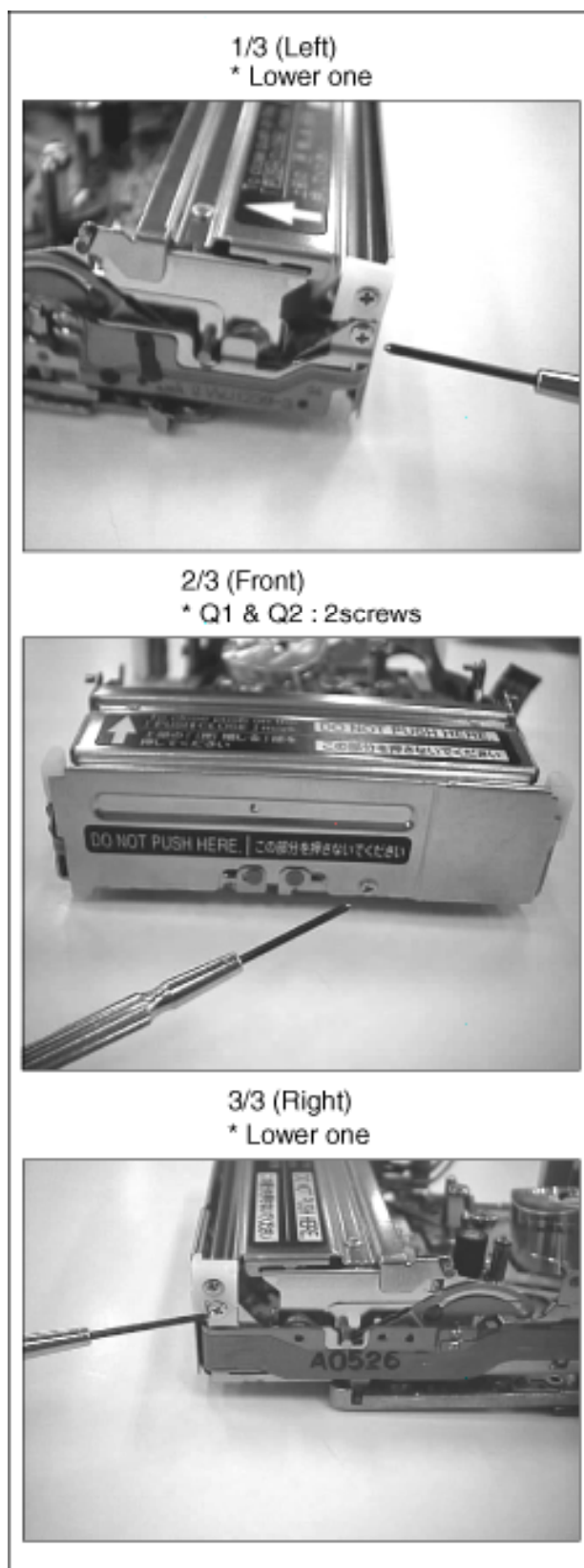


Fig. D1-2

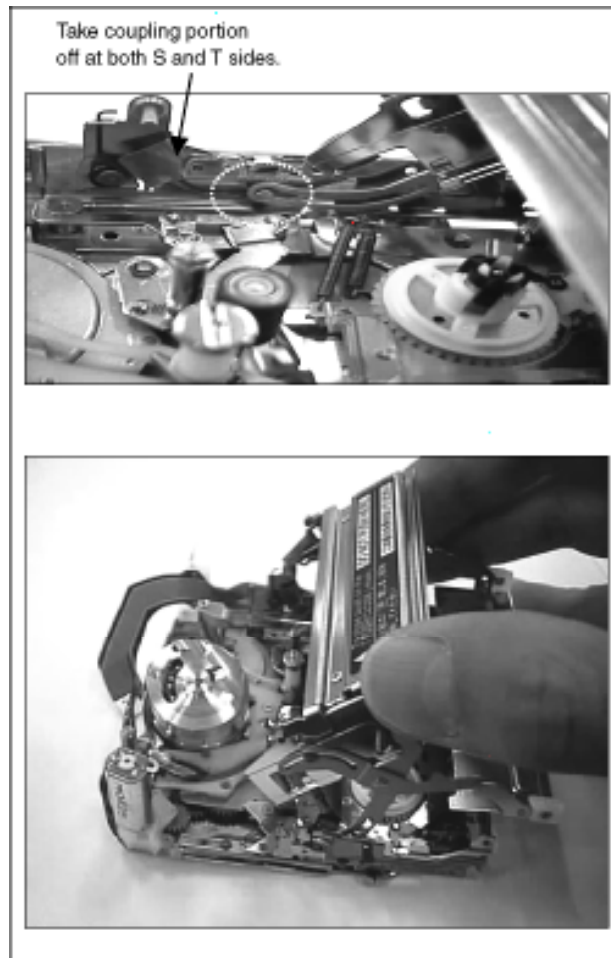


Fig. D2-1

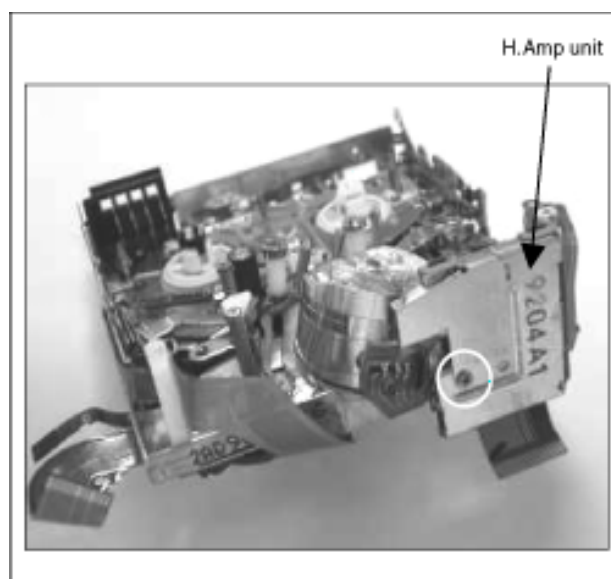


Fig. D2-2

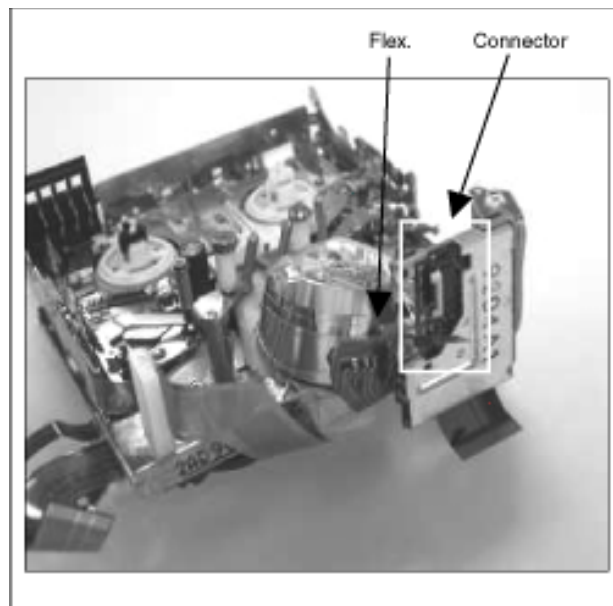


Fig. D2-3

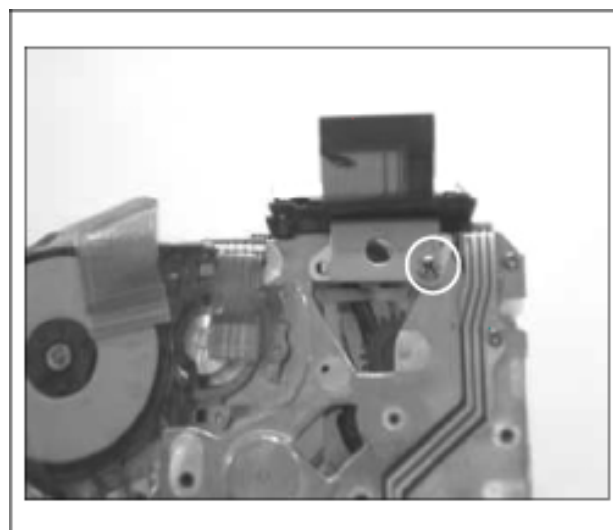


Fig. D3-1

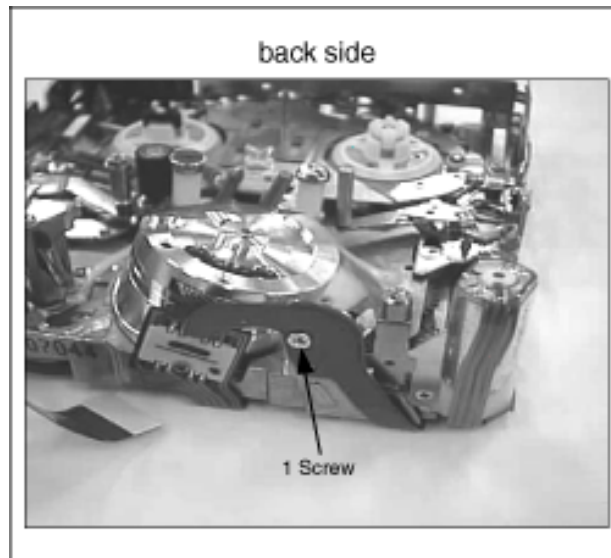


Fig. D3-2

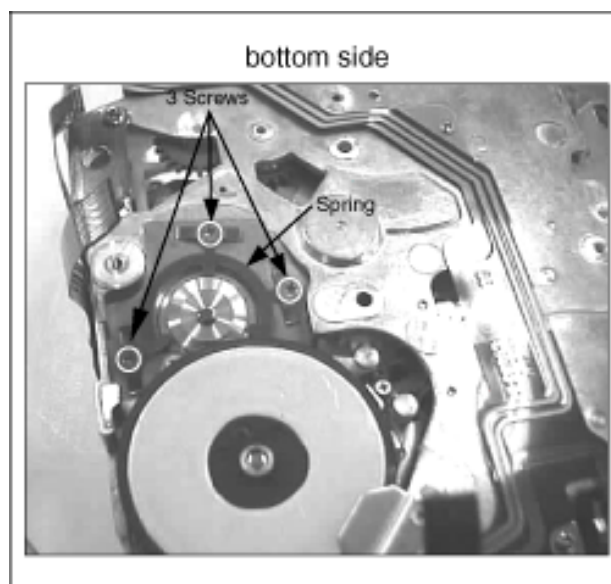


Fig. D3-3



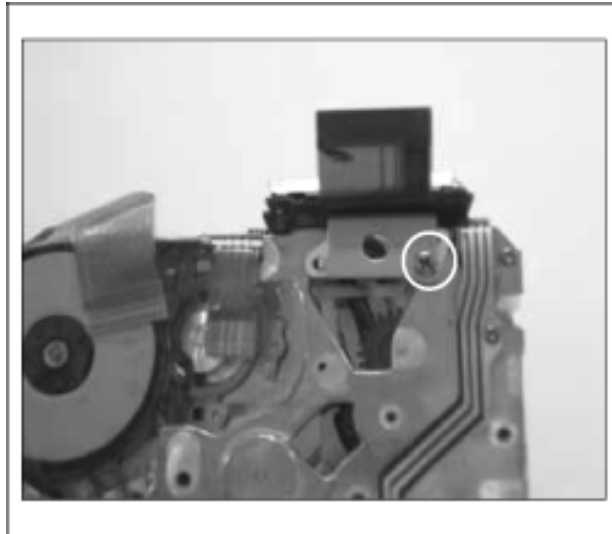


Fig. D4-1

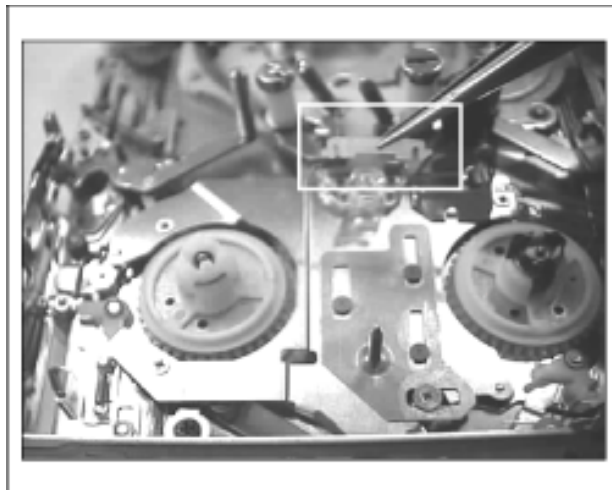


Fig. D4-2

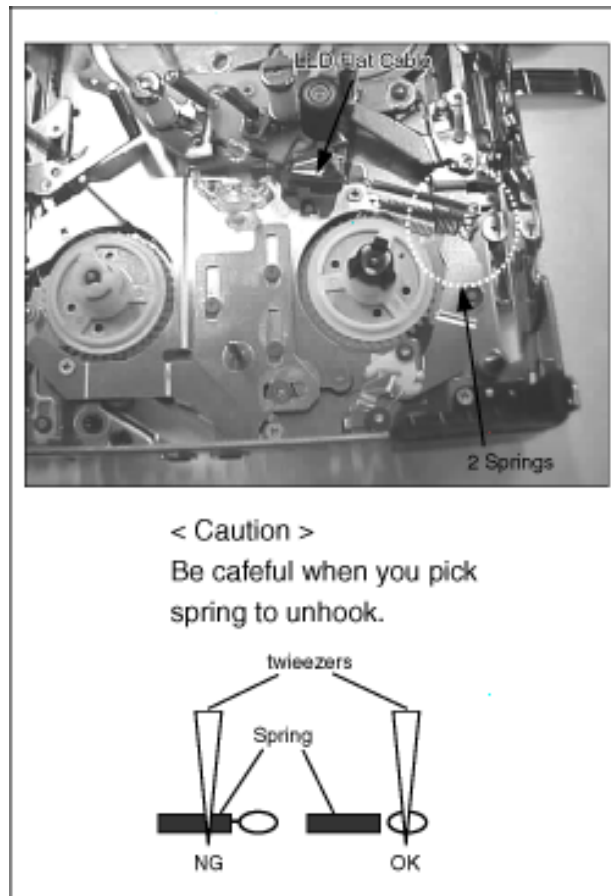


Fig. D4-3

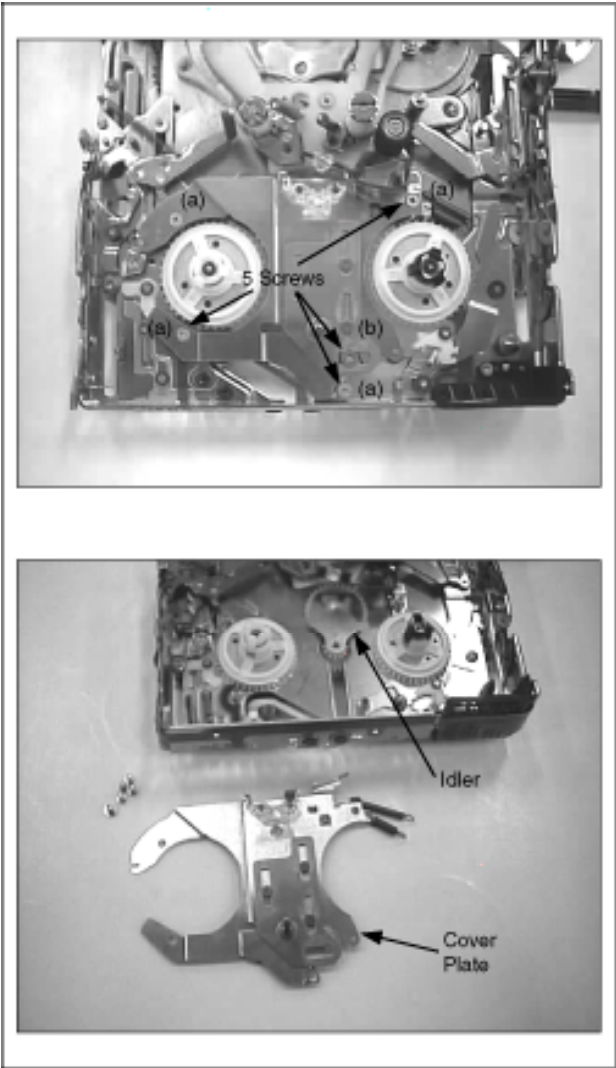


Fig. D5-1

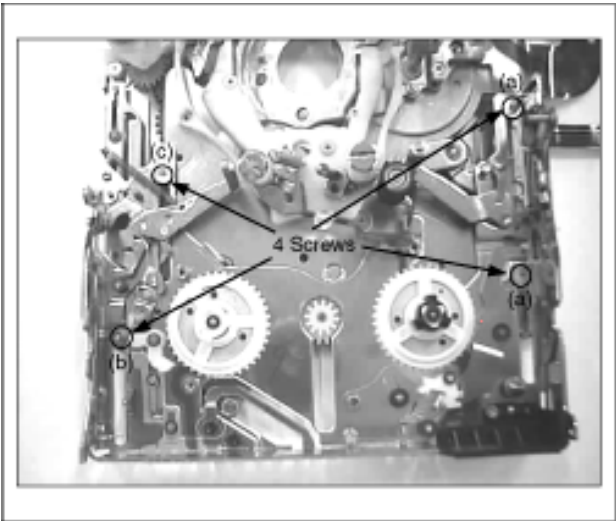


Fig. D5-2

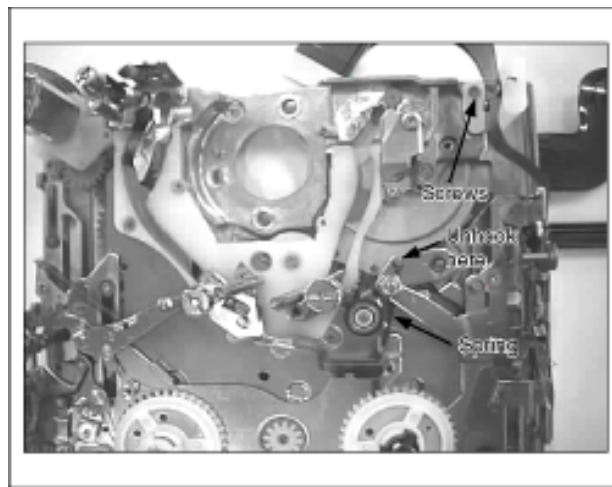


Fig. D6-1

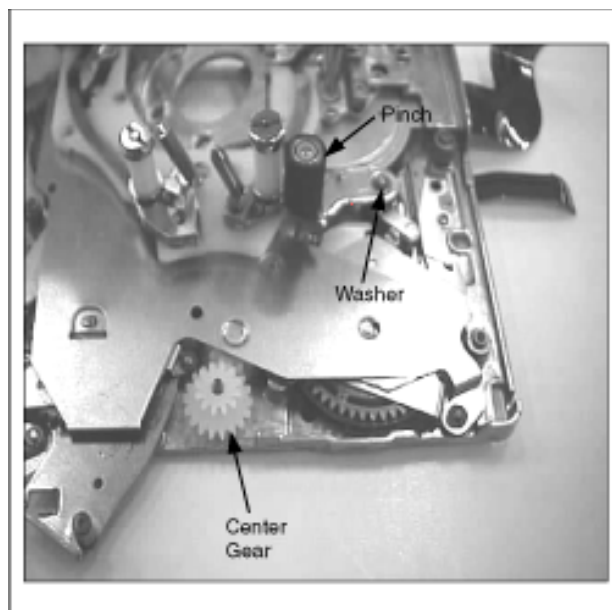


Fig. D6-2

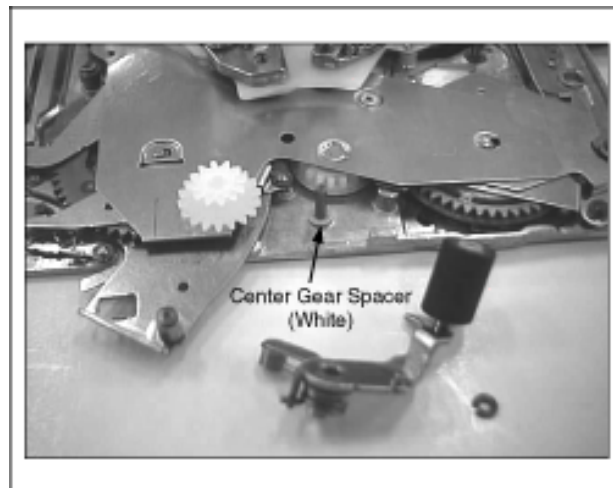


Fig. D7-1

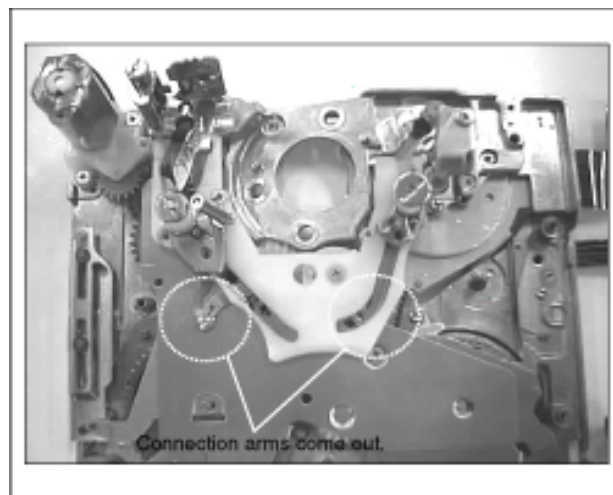
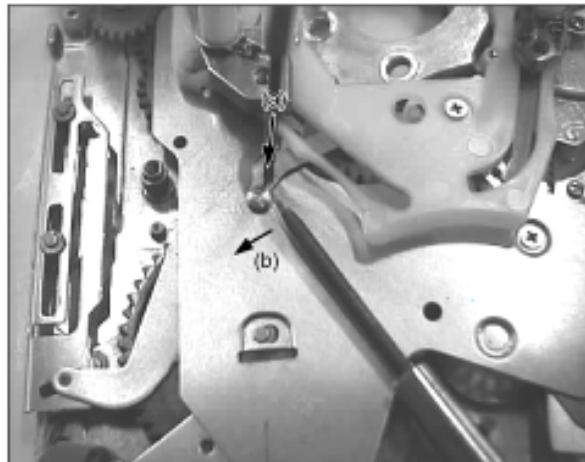


Fig. D7-2

- a) Hold Loading Gear side.  
b) Disconnect connection arms.  
(S-side)



(T-side)

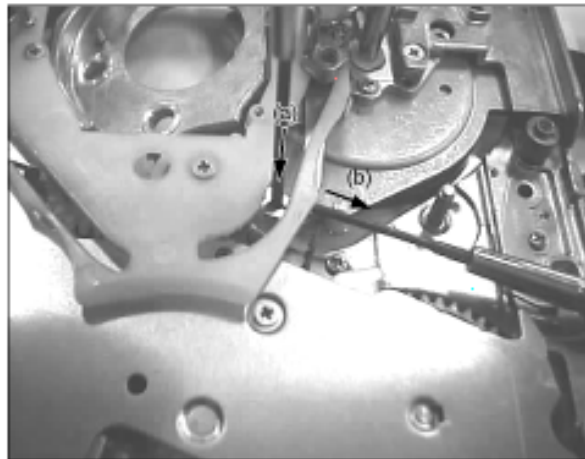


Fig. D7-3

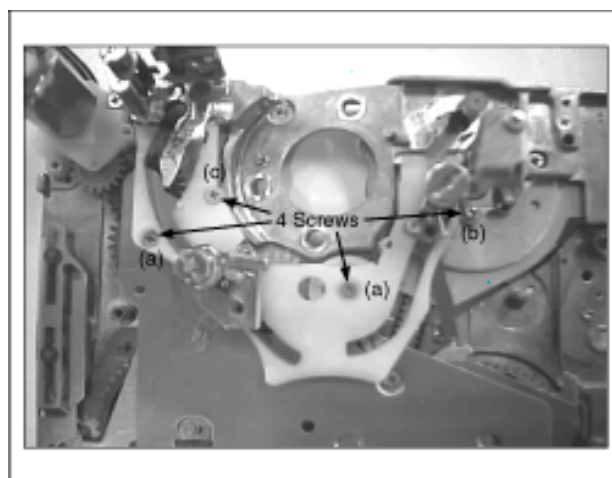


Fig. D8

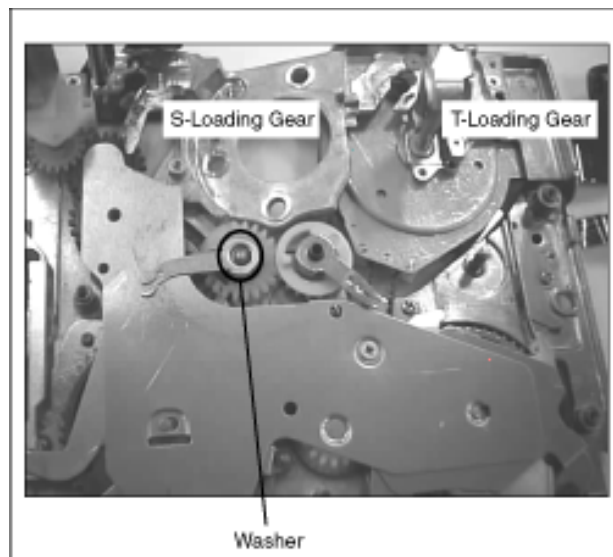


Fig. D9

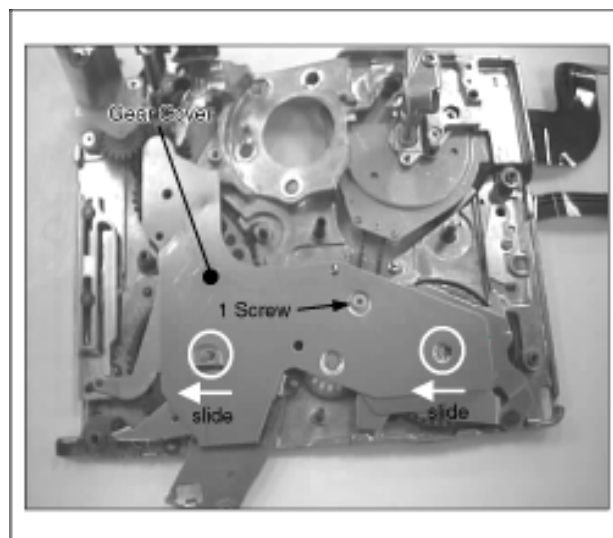


Fig. D10

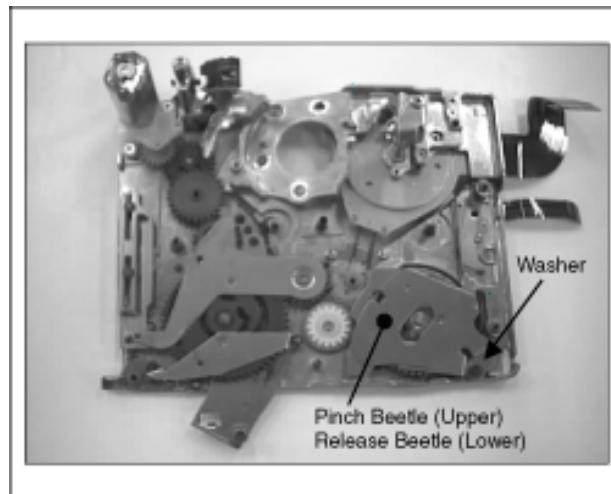


Fig. D11

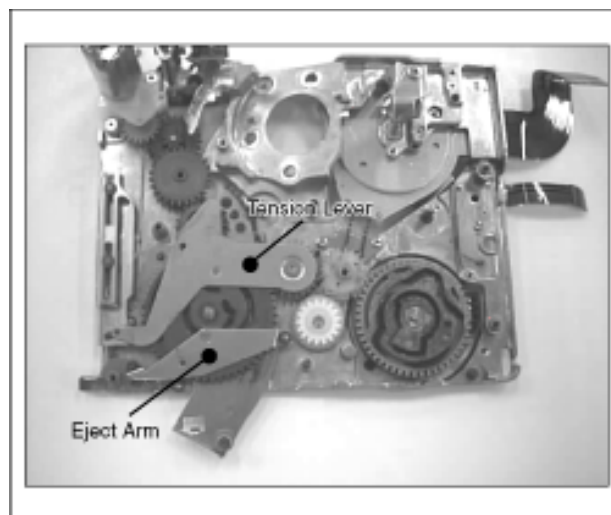


Fig. D12



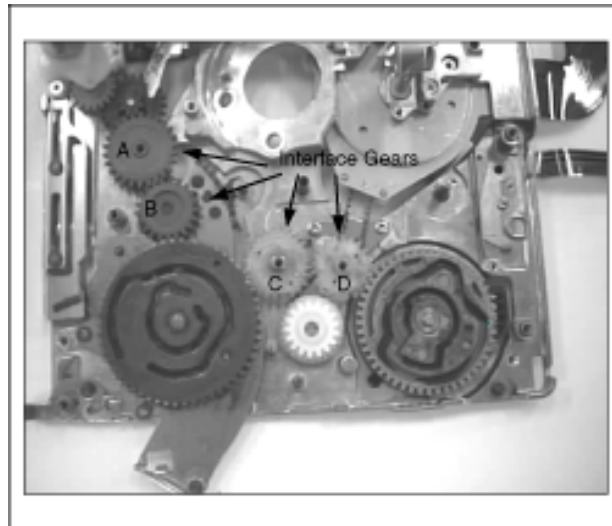


Fig. D13

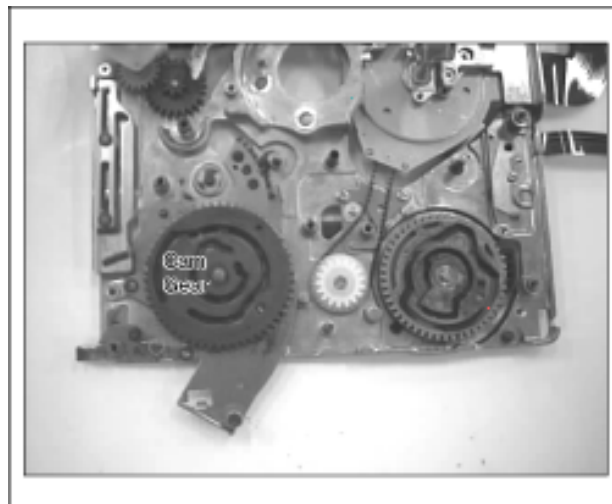


Fig. D14

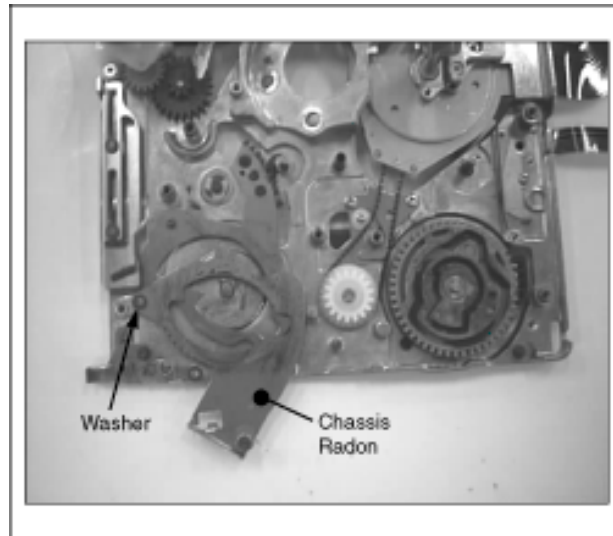


Fig. D15

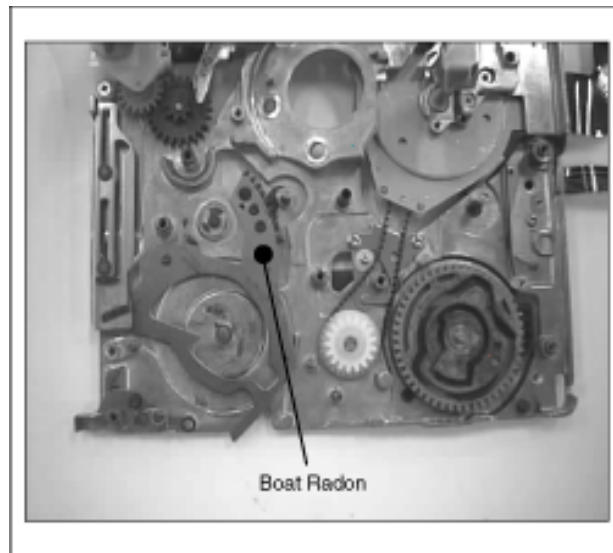


Fig. D16

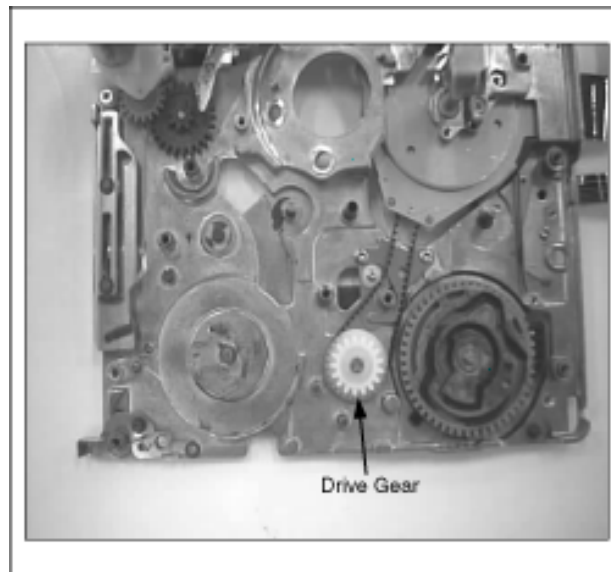


Fig. D17-1

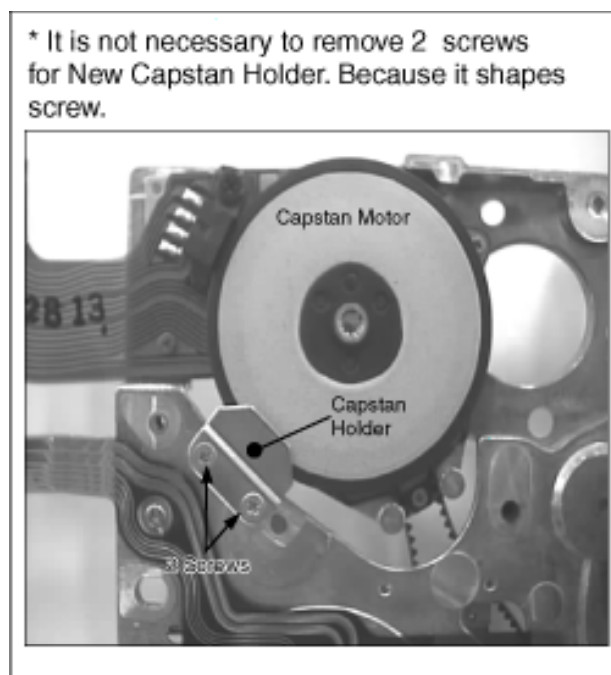


Fig. D17-2

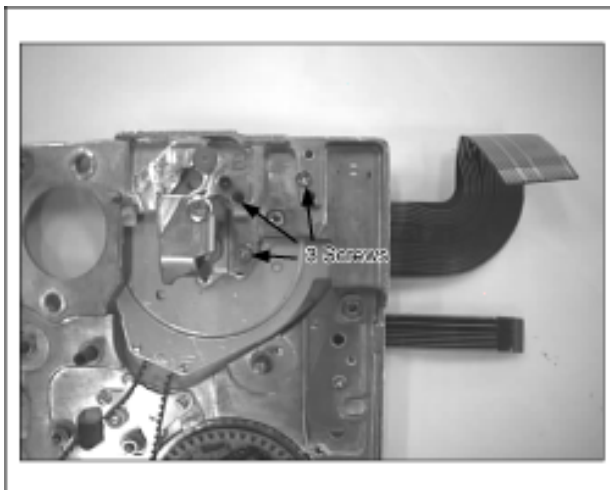


Fig. D18-1

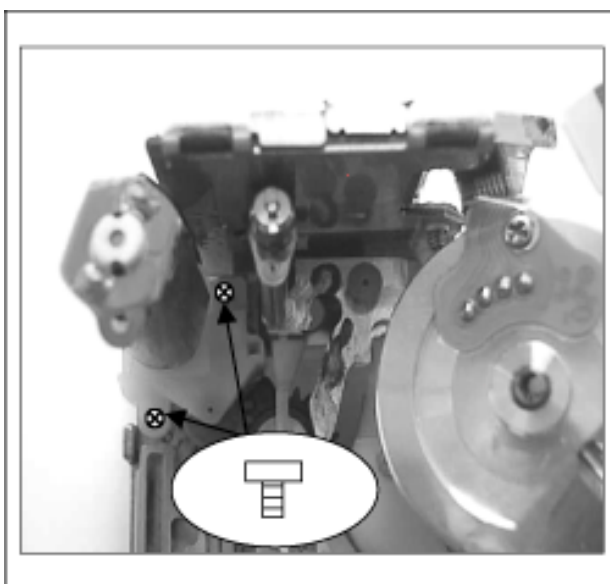


Fig. D18-2

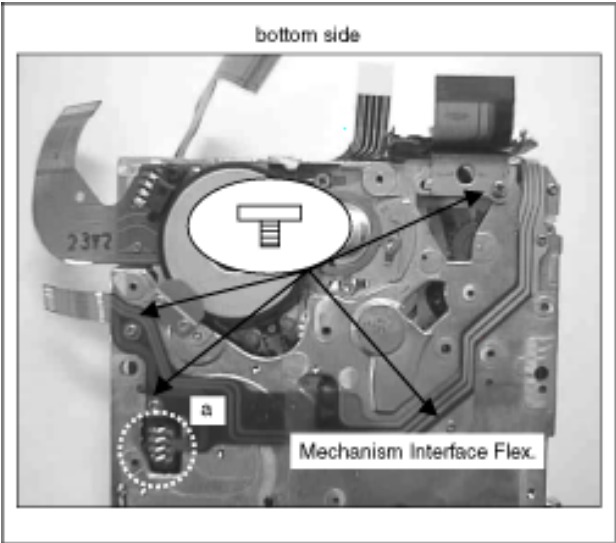


Fig. D19

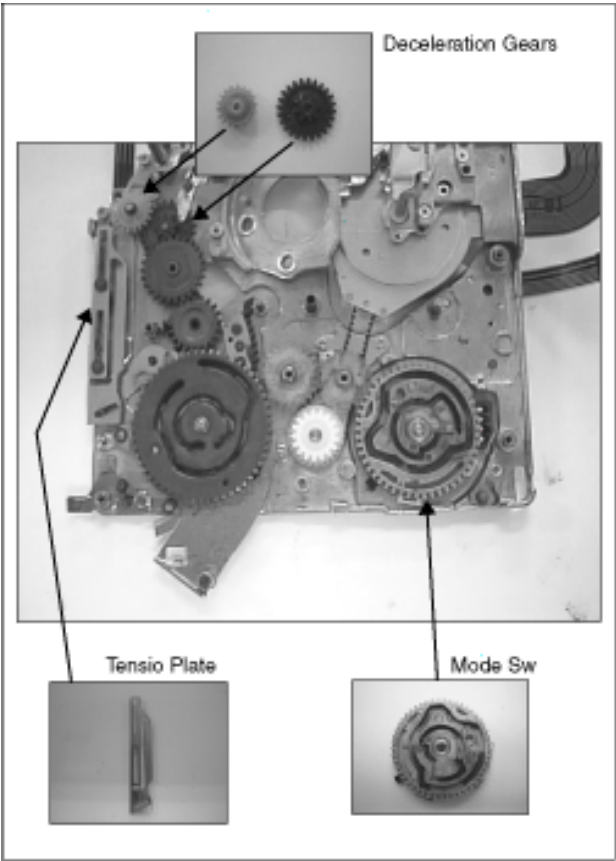


Fig. D20-1

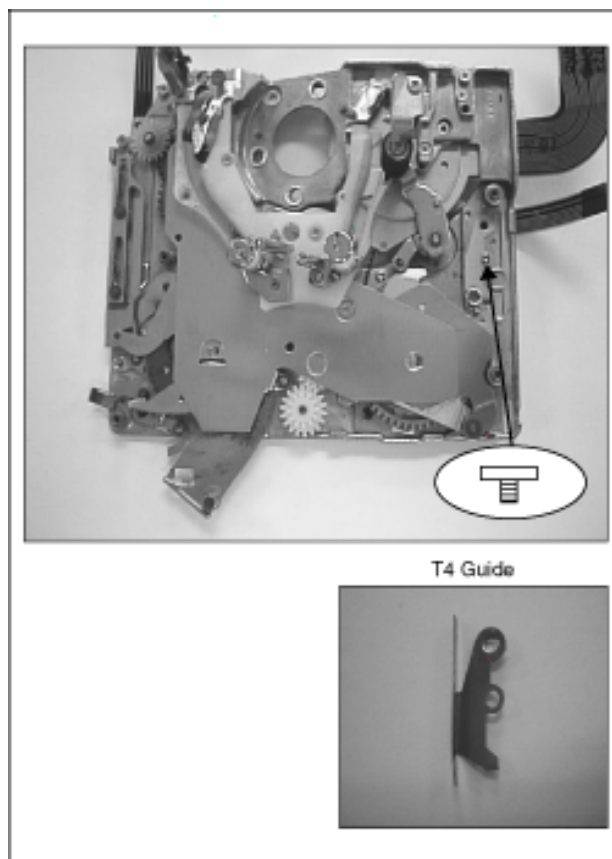


Fig. D20-2

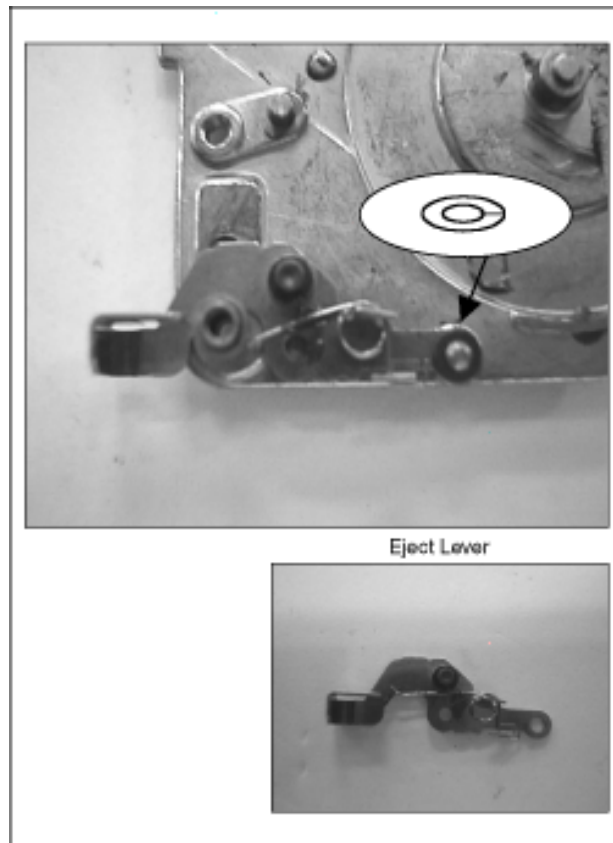


Fig. D20-3

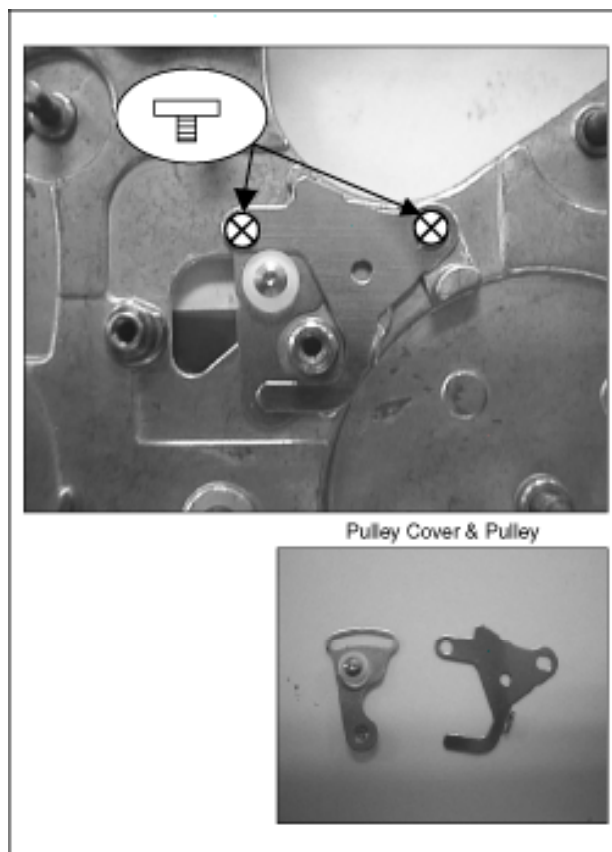
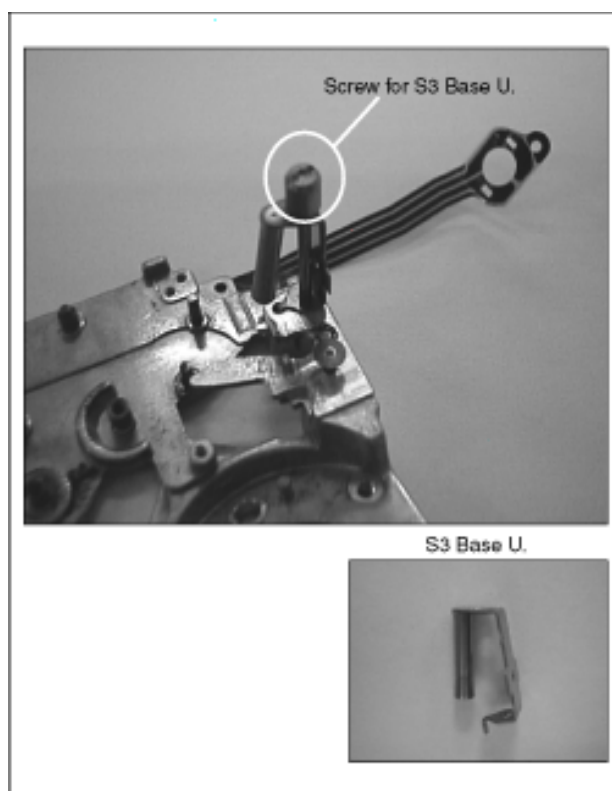


Fig. D21





# 4.1 ASSEMBLY PROCEDURE

[TOP](#) [PREVIOUS](#) [NEXT](#)

\* 1) Procedure 20 for H.Amp Unit is applied only Q1 & Q2 mechanism.

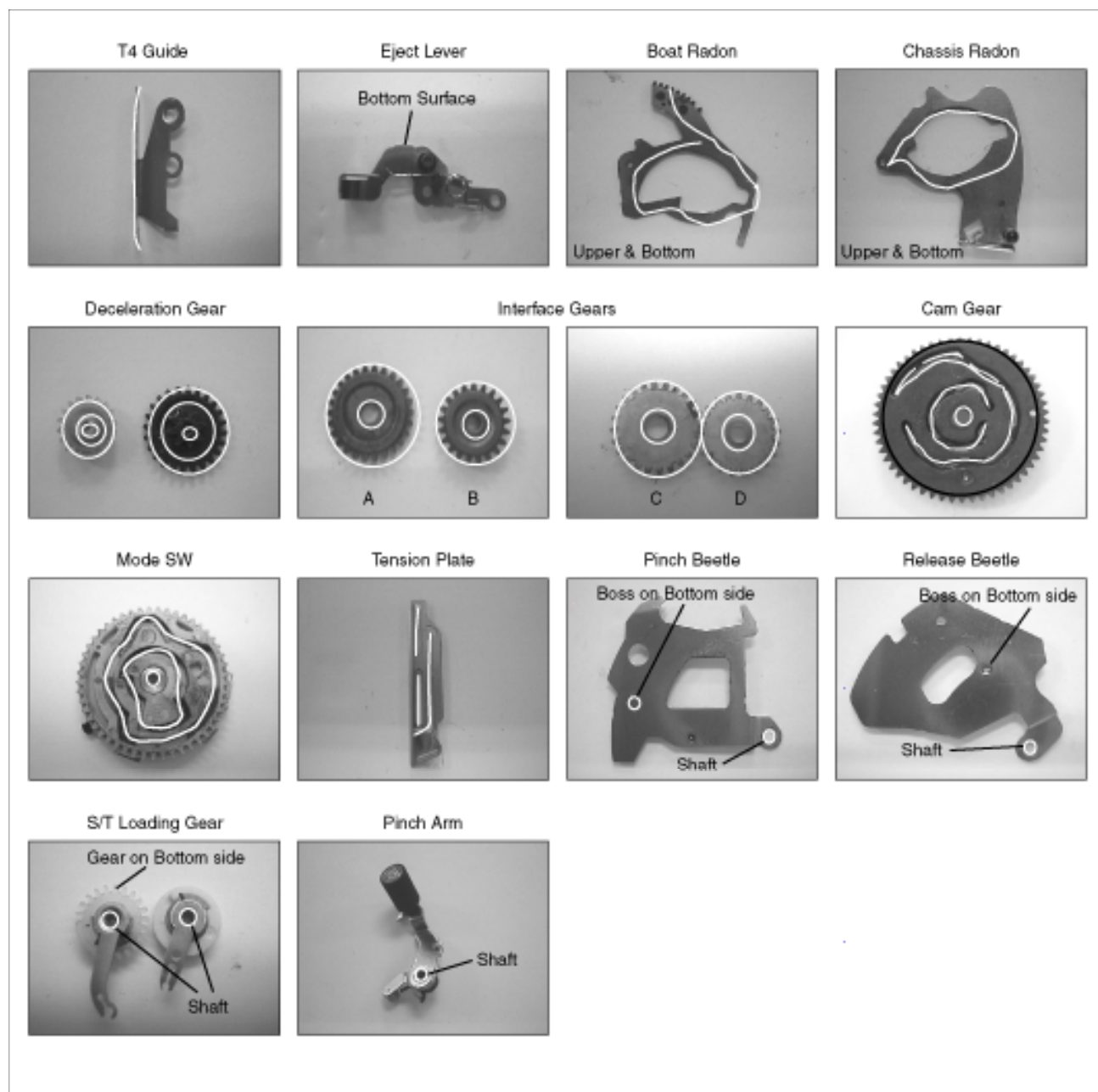
2) Procedure 1 - 3 can be changed in order.

No.	Item	Fig.	Grease	Procedure
*1	S3 Base U.	<a href="#">Fig. A1</a>	--	1) Put S3 Base U on and tighten a screw.
*2	T4 Guide , Eject Lever, Pulley Cover & Pulley.	<a href="#">Fig. A2-1</a>	•	1) Put hole of T4 Guide to hole of chassis and tighten a screw.
		<a href="#">Fig. A2-2</a>	•	2) Put Eject Lever on and a washer.
		<a href="#">Fig. A2-3</a>	--	3) Put boss of Pulley to hole of chassis on. Hole of chassis under pulley should be visible through slit of Pulley.
		<a href="#">Fig. A2-4</a>	--	4) Put Pulley Cover on Pulley and tighten 2 screws.
*3	Mode Switch , Deceleration Gears & Tension Plate.	<a href="#">Fig. A3</a>	•	1) Put Mode Sw on.
			•	2) Put Deceleration Gear (B) on
			•	3) Put Deceleration Gear (A) on and a washer.
			•	4) Put Tension Plate on and 2 washers.
4	Loading Motor unit & Mechanism Interface Flex.	<a href="#">Fig. A4</a>	--	1) Put Loading Motor Unit on and tighten 2 screws.
			--	2) Put Mechanism Interface Flex on and tighten 4 screws. After that, solder at terminal of Mode Sw.
5	Capstan Holder & Capstan Motor	<a href="#">Fig. A5-1</a>	--	1) Put Capstan Motor on and tighten 3 screws. Timing Belt should be between Pulley and boss.
		<a href="#">Fig. A5-2</a>	--	2) Put Capstan Holder on and tighten 2 screws.
6	Drive Gear	<a href="#">Fig. A6</a>	--	1) Put a washer to shaft and install Drive Gear. Timing Belt should be wound around Drive Gear. After that, confirm Timing Belt and Gear are rotated together.
7	Boat Radon	<a href="#">Fig. A7</a>	•	1) Put hole of Boat radon to shaft of chassis.
8	Chassis Radon	<a href="#">Fig. A8</a>	•	1) Put Chassis Radon and a washer on.
9	Cam Gear	<a href="#">Fig. A9</a>	•	1) Put Cam Gear on. Phase Mark should be in the same line with chassis of shaft..
10	Interface Gears	<a href="#">Fig. A10-1</a>	•	1) Put Interface Gear(C) & (D). Each phase mark should be in the same line.
		<a href="#">Fig. A10-2</a>	•	2) Put Interface Gear(A) & (B) on.
11	Tension Lever & Eject Arm.	<a href="#">Fig. A11</a>	--	1) Put boss of Tension Lever into slit of Cam Gear and Tension Plate, then tighten a screw.

				2) Put boss of Eject Arm into slit of Cam Gear. Put a washer on shaft of chassis.
12	Pinch Beetle & Release Beetle	<a href="#">Fig. A12</a>	•	1) Put boss of Pinch Beetle into slit of Mode Sw. 2) Put boss of Release Beetle into slit of Mode Sw. 3) Put a washer on.
13	Gear Cover	<a href="#">Fig. A13</a>	--	1) Keep sliding Gear Cover and put it on. 2) Tighten a screw.
14	T-Loading Gear & S-Loading Gear	<a href="#">Fig. A14</a>	•	1) Put S-Loading Gear on. 2) Put T-Loading Gear on. Each phase mark should be in the same line.
15	Rail Unit	<a href="#">Fig. A15-1</a>	--	1) Make half loading until Connection Arm comes out.
		<a href="#">Fig. A15-2</a>	--	2) Connect Arm of S & T Loading Gear and Connection Arms. a) Hold Loading Gear side. b) Push Arm of S & T Loading Gear into slit of connection arms.
		<a href="#">Fig. A15-3</a>	--	3) Tighten 4 screws.
16	Pinch Arm & Center Gear	<a href="#">Fig. A16-1</a>	--	1) Put Center Gear Spacer on shaft of chassis. 2) Put Center Gear on.
		<a href="#">Fig. A16-2</a>	•	3) Make full loading position and put Pinch arm on, then put a washer on.
17	Sub Chassis Unit	<a href="#">Fig. A17-1</a>	--	1) Make unloading position until moving Release Beetle Confirm spring is exist.
		<a href="#">Fig. A17-2</a>		2) Put Sub Chassis Unit on as pre-installation.
		<a href="#">Fig. A17-3</a>		3) Tighten 3 screws. Make Loading position until 1 screw position appears, then tighten a screw.
		<a href="#">Fig. A17-4</a>		4) Tighten a screws at Flex Holder portion and Hook spring back to Pinch Arm.
18	LED Holder, Cover plate & Idler U.	<a href="#">Fig. A18-1</a>	--	1) Put Idler U into shaft of Drive Gear.
		<a href="#">Fig. A18-2</a>	--	2) Put Cover Plate on and tighten 5 screws, then hook 2 springs to 2hooking portion of Sub chassis. And also put LED Flat Cable back.
		<a href="#">Fig. A18-3</a>		3) Put LED Holder back.
19	Confirmation of Mechanism movement , Cylinder Unit & RT Flex. Flame.	<a href="#">Fig. A19-1</a>	--	1) Confirm loading and unloading is smooth.
		<a href="#">Fig. A19-2</a>	--	2) Put Cylinder Unit & Spring on and tighten 3 screws.
		<a href="#">Fig. A19-3</a>	--	3) Put RT Flex. Flame on and tighten 2 screws.
*20	H Amp Unit. (Only Q1 & Q2)	<a href="#">Fig. A20-1</a>	--	1) Put H Amp Unit on and tighten a screw at bottom of chassis.
		<a href="#">Fig. A20-2</a>		2) Connect Cylinder Flex to connector.

		<a href="#">Fig. A20-3</a>		3) Put Shield case on and tighten a screw.
21	Cassette Up Unit.	<a href="#">Fig. A21-1</a>	--	1) Put both S & T sides to coupling portion on.
		<a href="#">Fig. A21-2</a>		2) Tighten 3 screws. (Q1 & 2 have 4 screws)

The following parts should be applied Molyton Grease (VFK1024).



How to use washer jigs.

No.	Item	Fig.	Procedure
-----	------	------	-----------

1	Washer Jigs	<a href="#">Fig. W1-1</a>	1) Each Washers.
2		<a href="#">Fig. W1-2</a>	1) Put a washer on tip of Jig.
3		<a href="#">Fig. W1-3</a>	1) Put Jig on shaft.
4		<a href="#">Fig. W1-4</a>	1) Put a washer on shaft by pressing Jig.

Fig. W1-1

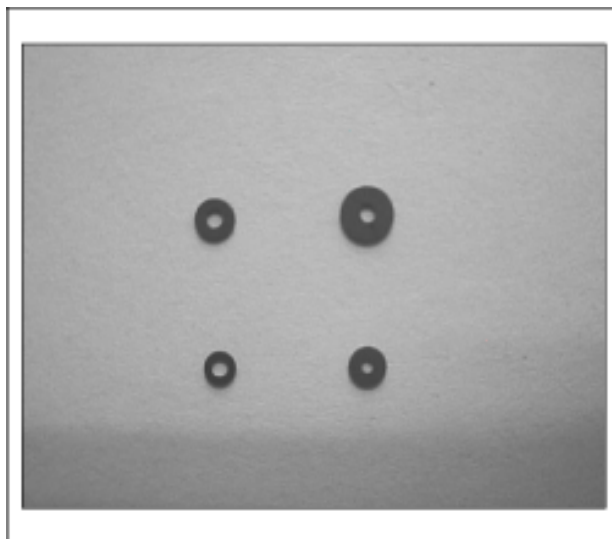


Fig. W1-2

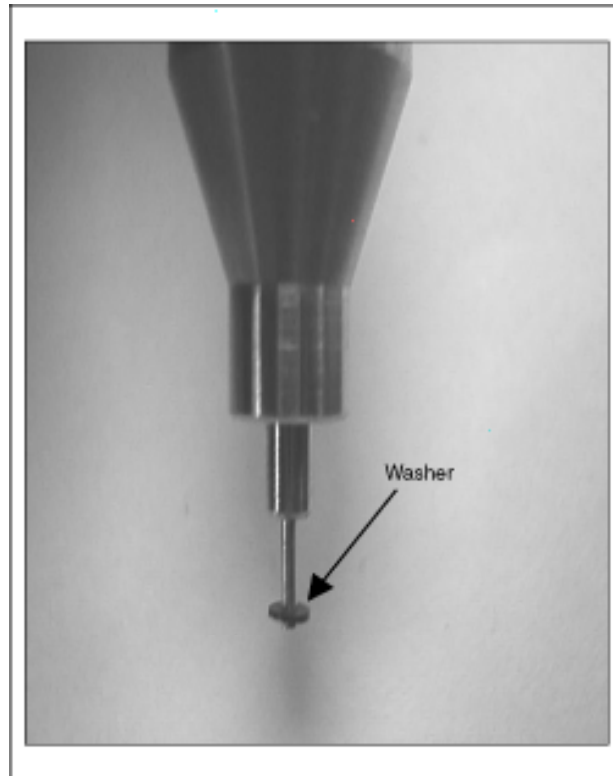


Fig. W1-3



Fig. W1-4

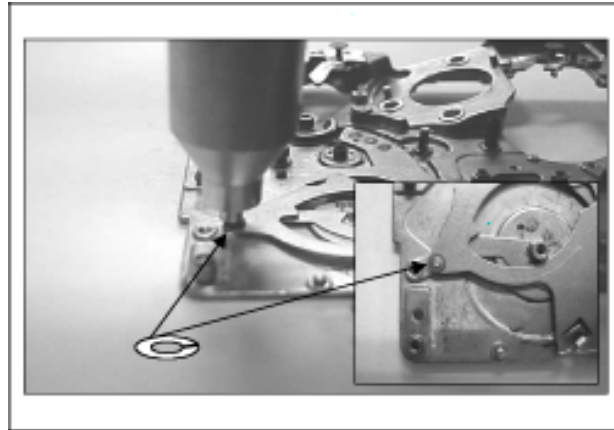


Fig. A1

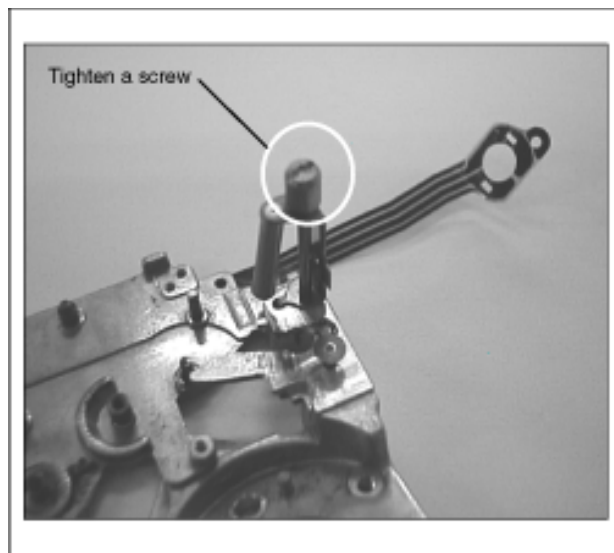


Fig. A2-1

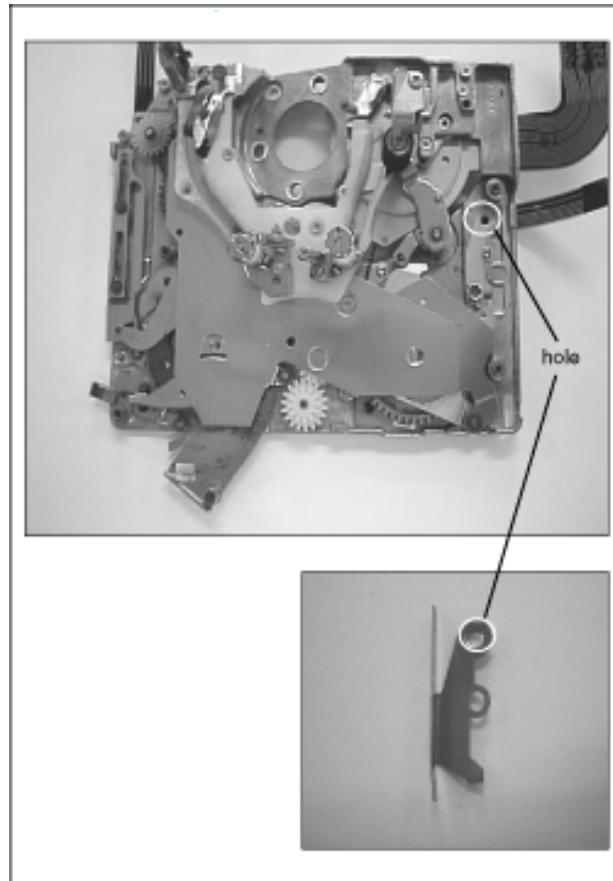


Fig. A2-2

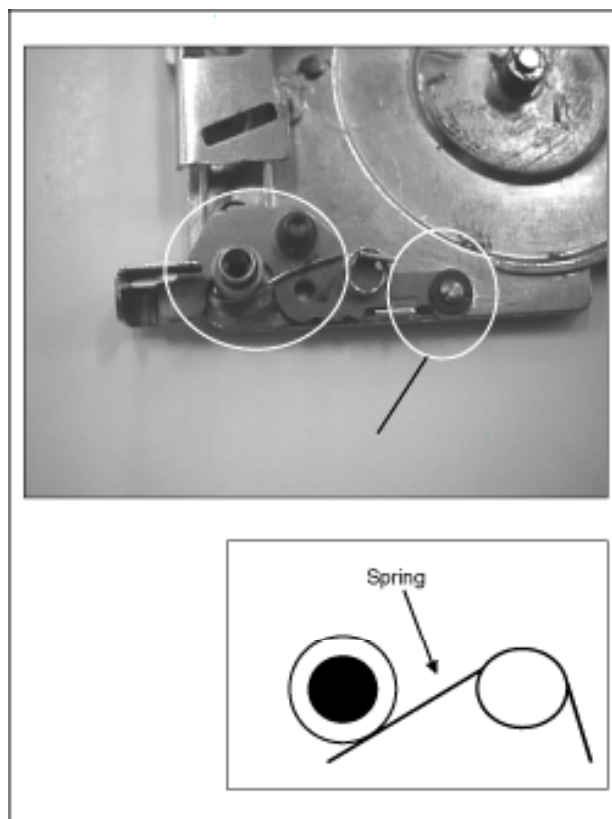


Fig. A2-3



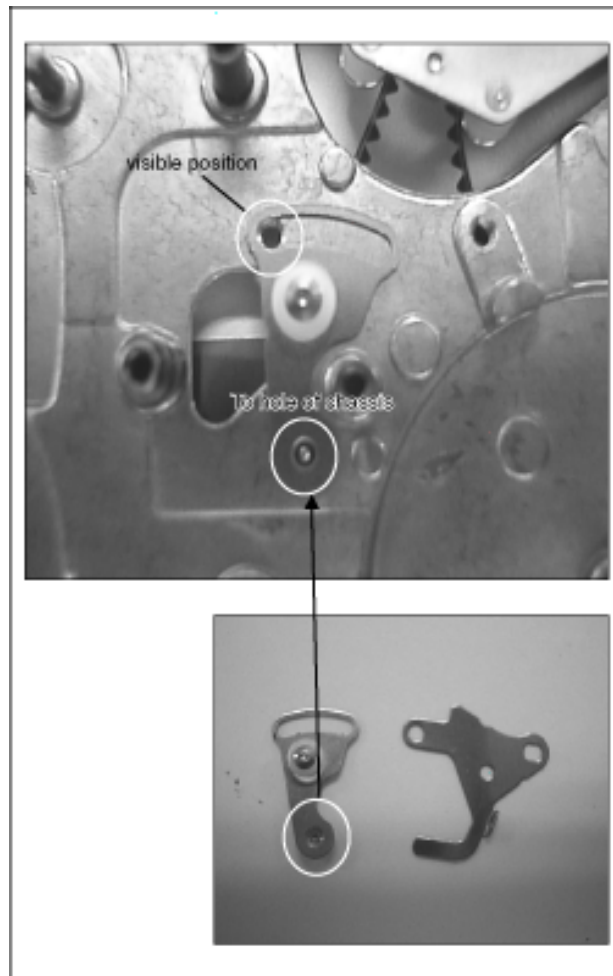


Fig. A2-4

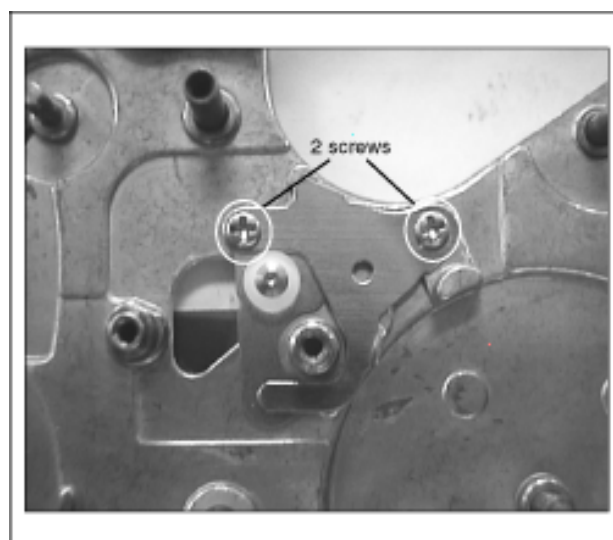


Fig. A3

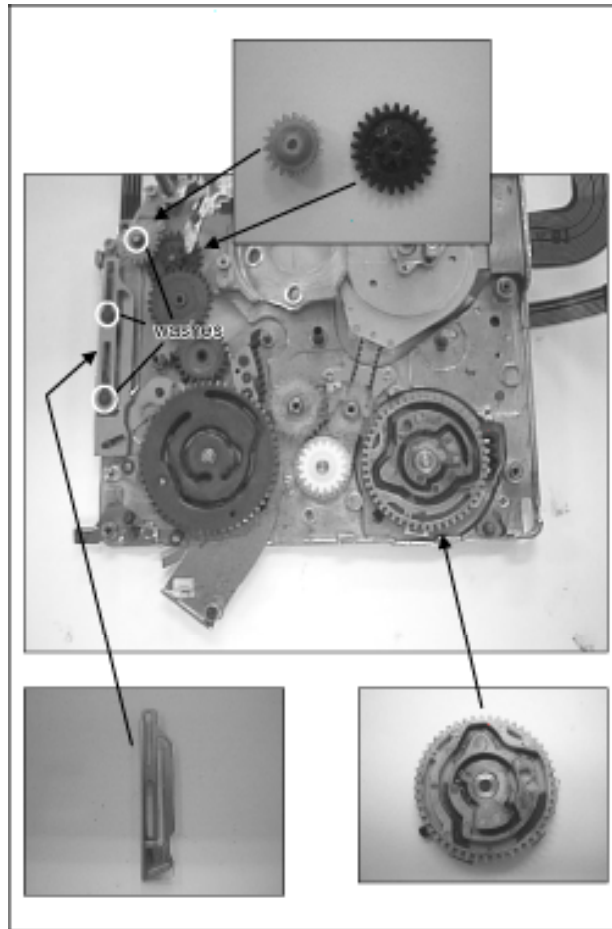


Fig. A4

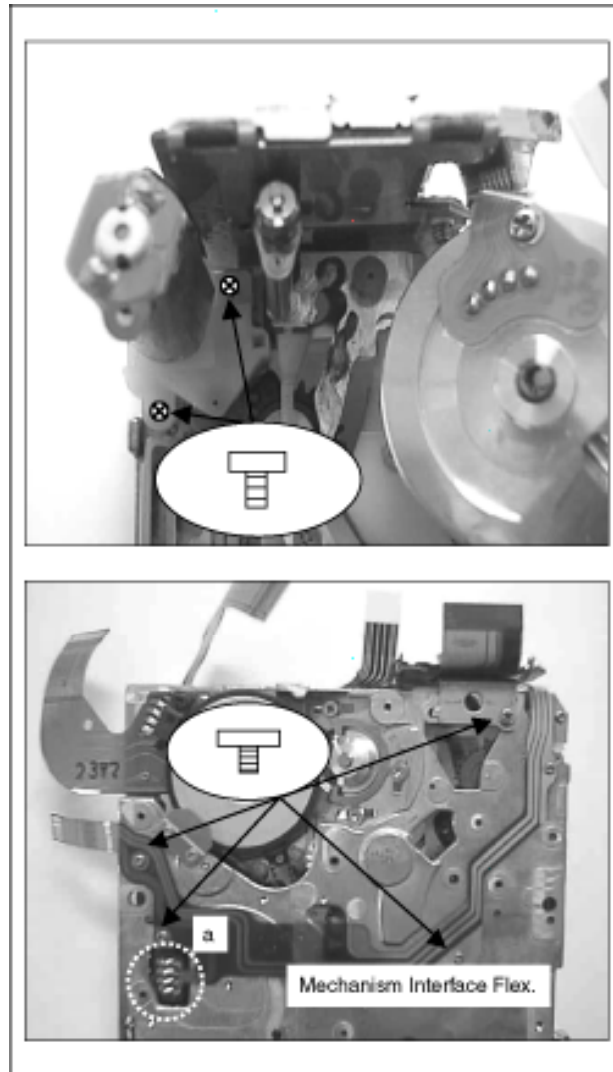


Fig. A5-1

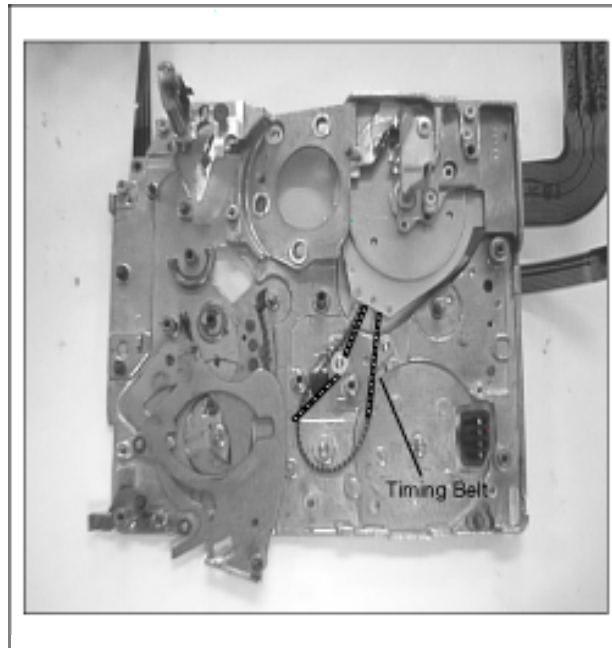


Fig. A5-2

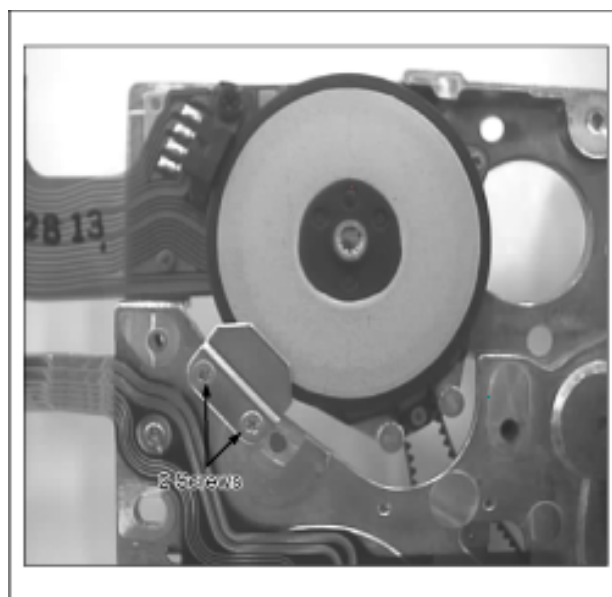


Fig. A6

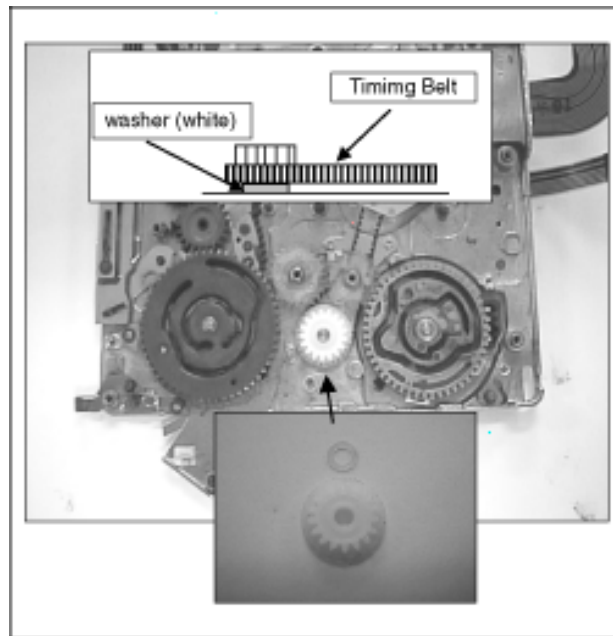


Fig. A7

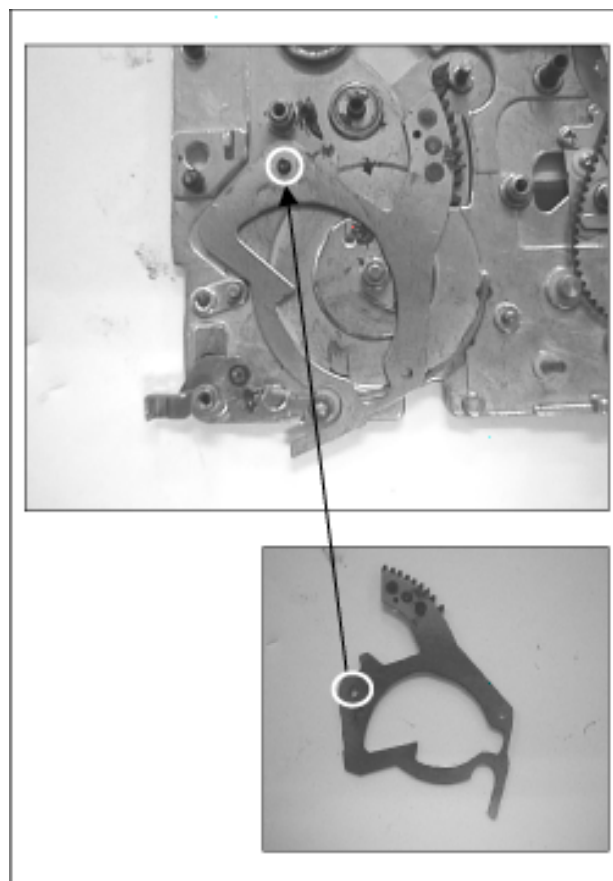


Fig. A8

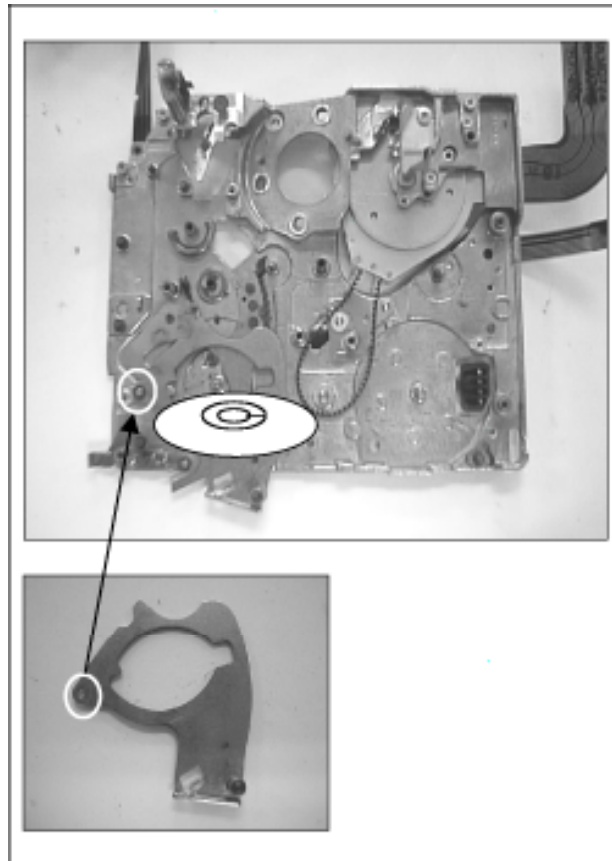


Fig. A9

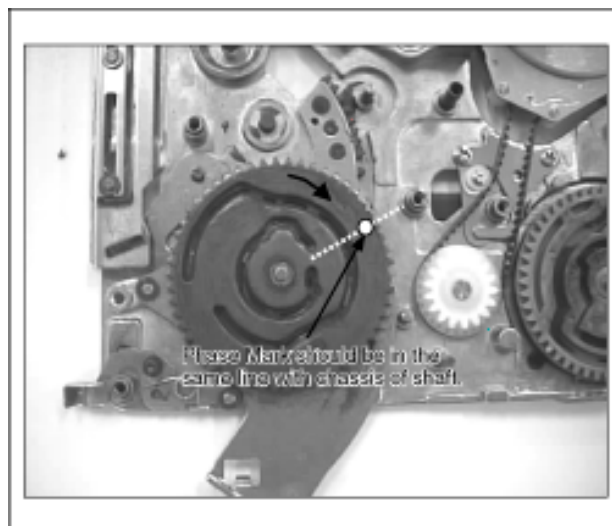


Fig. A10-1

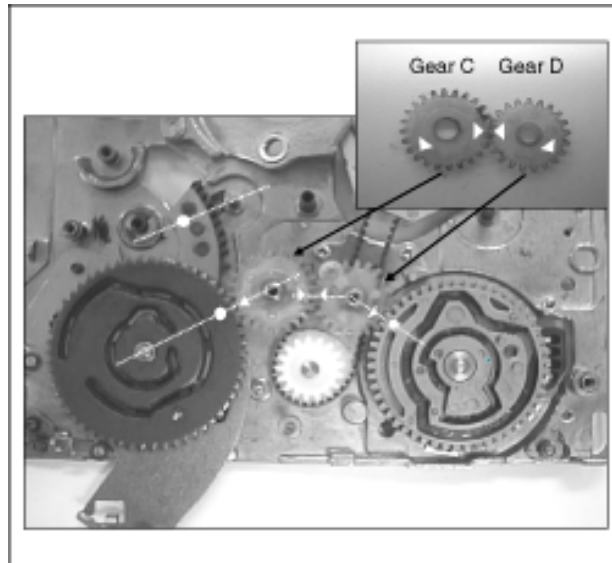


Fig. A10-2

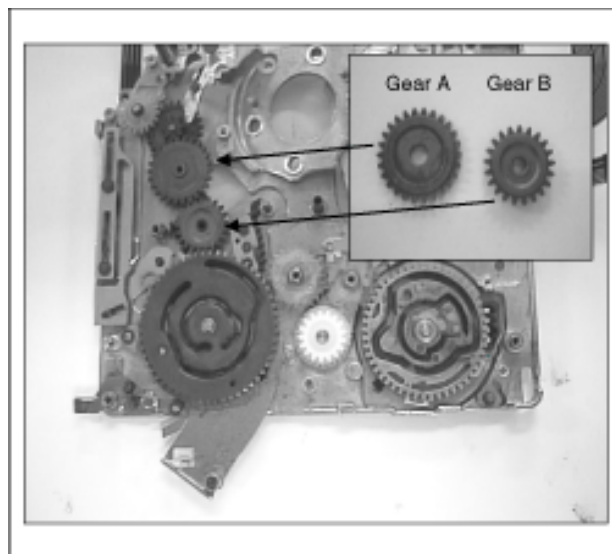


Fig. A11

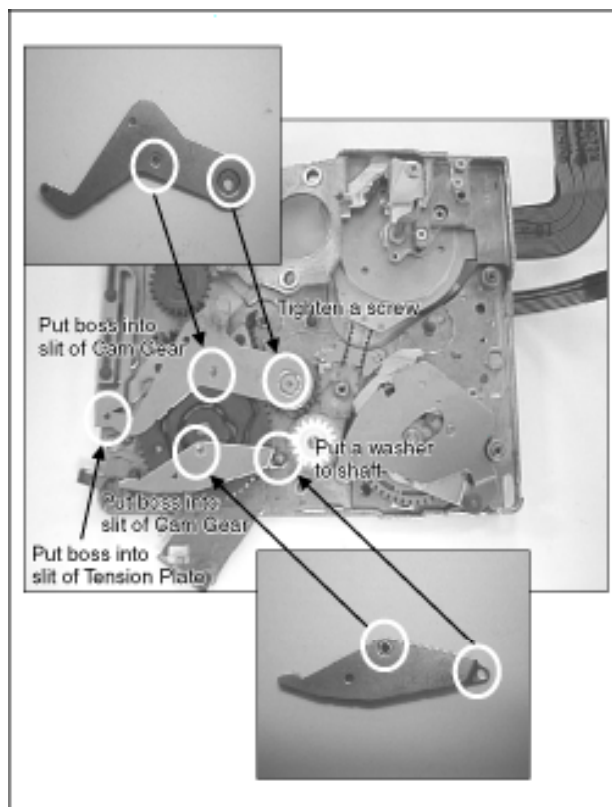


Fig. A12

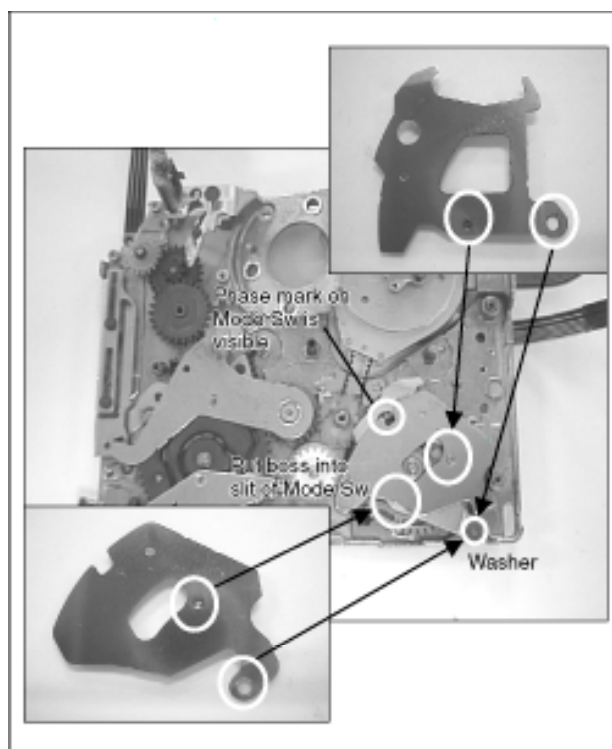


Fig. A13



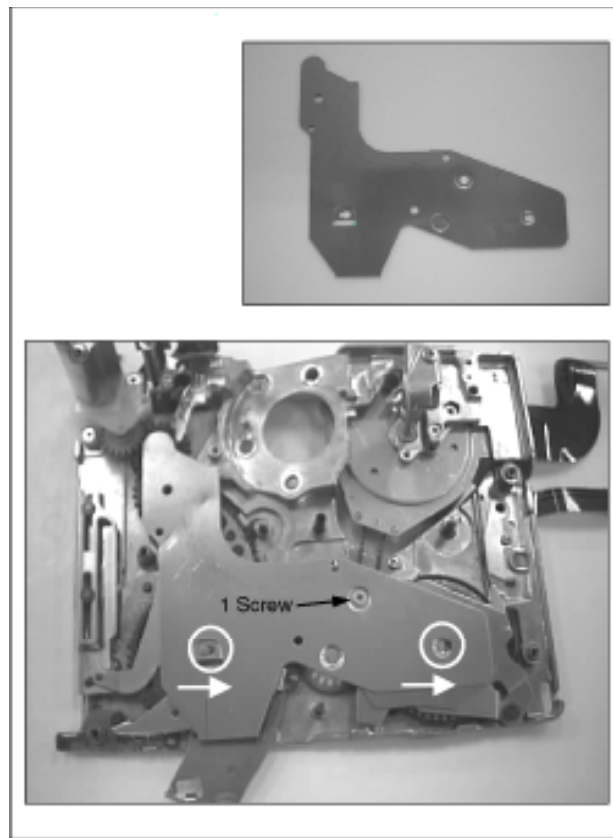


Fig. A14

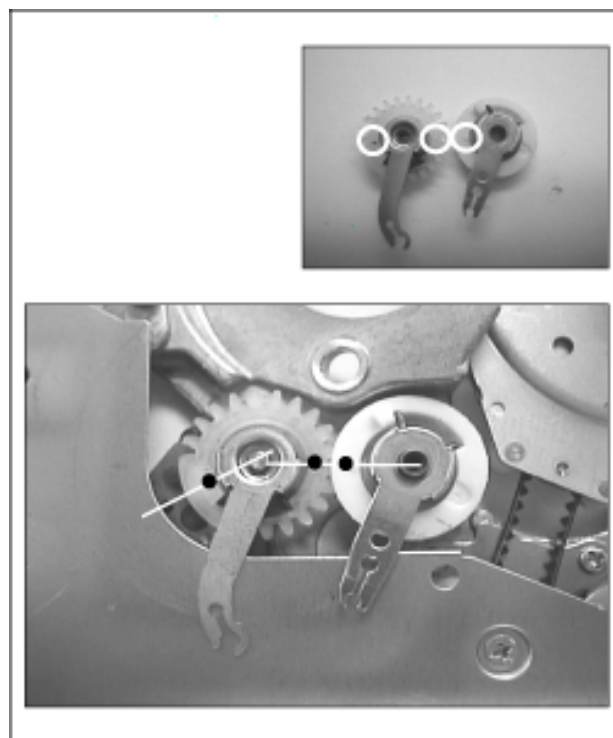


Fig. A15-1

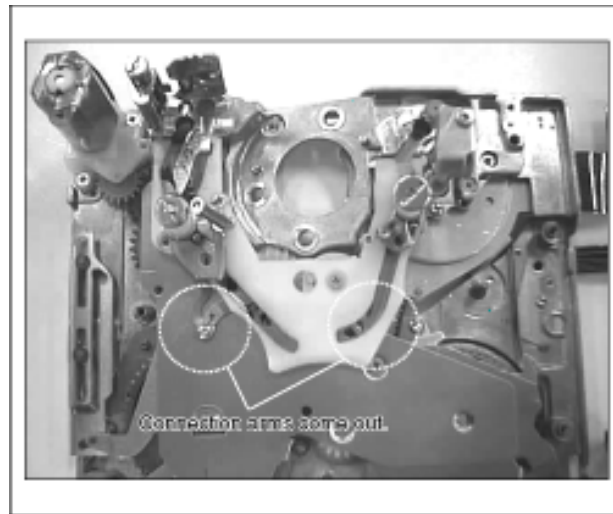


Fig. A15-2

- a) Hold Loading Gear side.  
b) Push Arm of S & T Loading Gear into slit of connection arms.

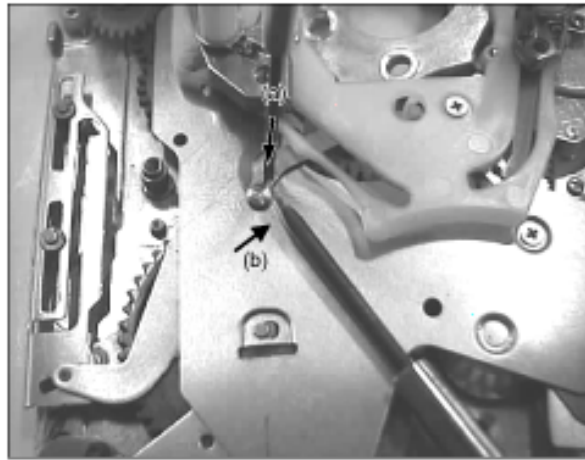


Fig. A15-3

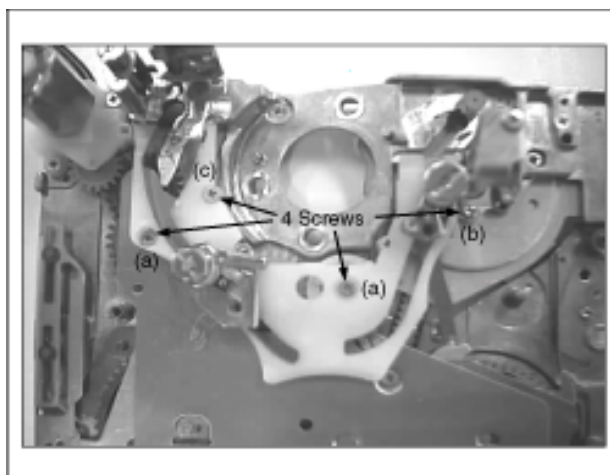


Fig. A16-1



Fig. A16-2

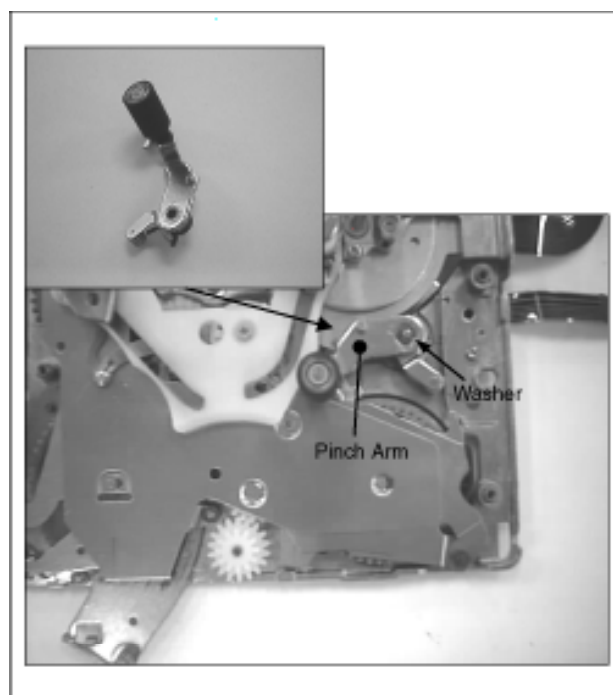


Fig. A17-1



Fig. A17-2

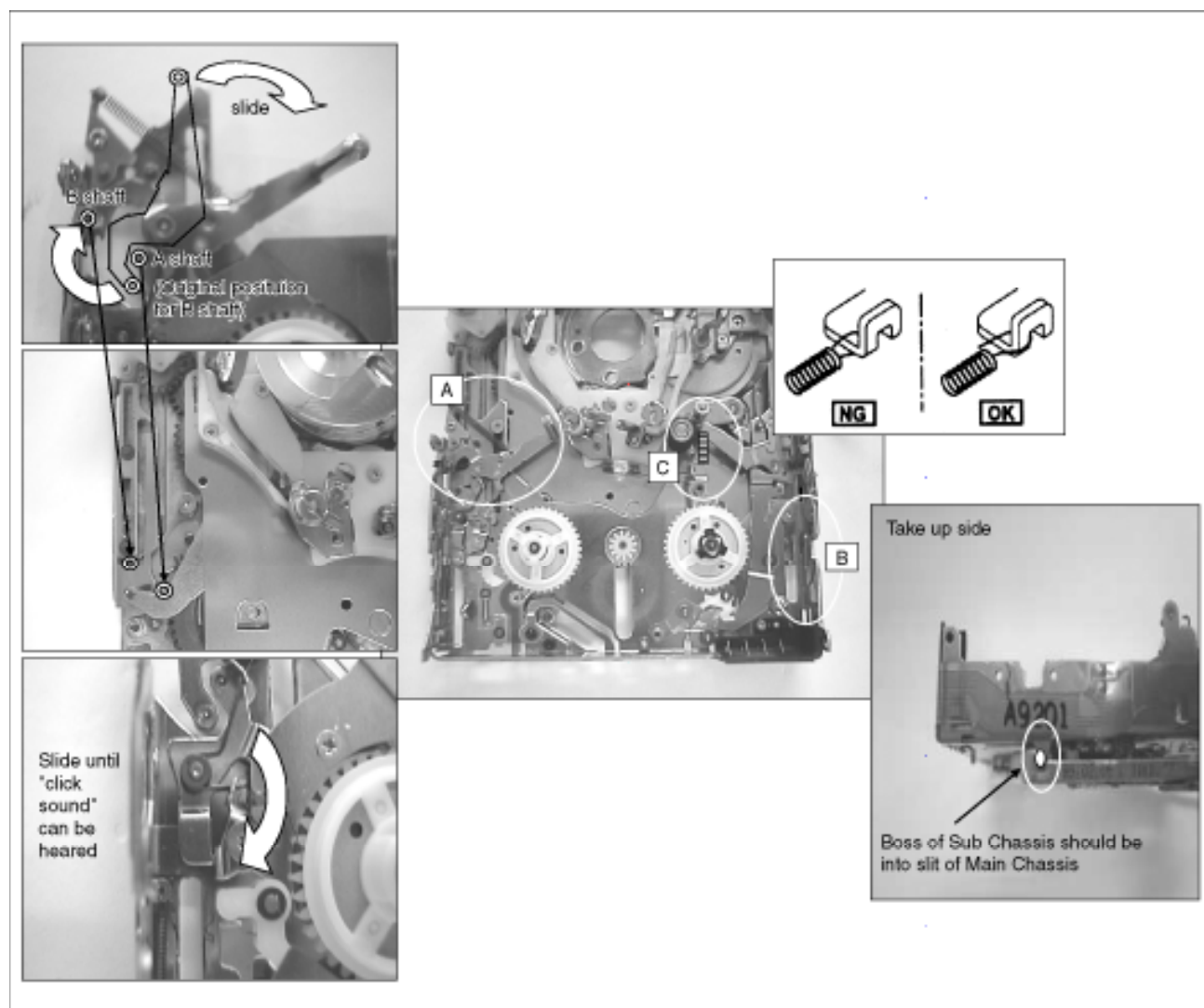


Fig. A17-3

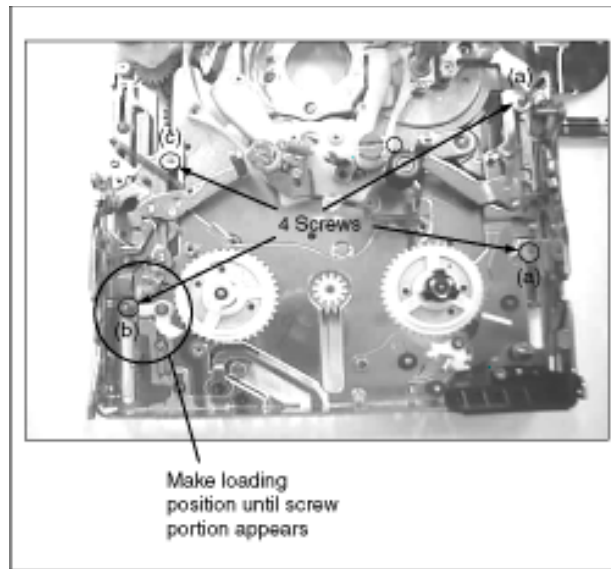


Fig. A17-4

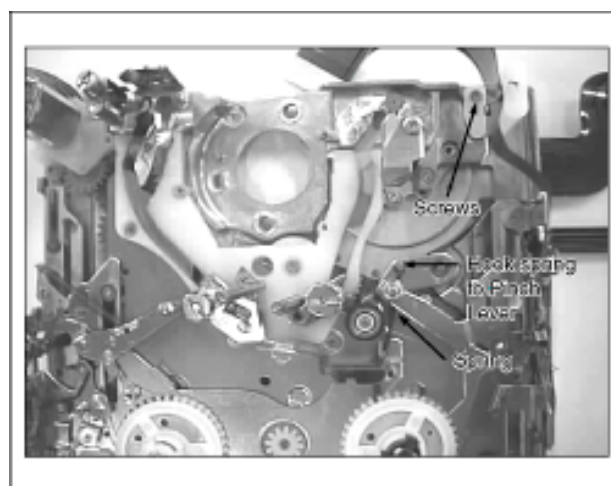


Fig. A18-1

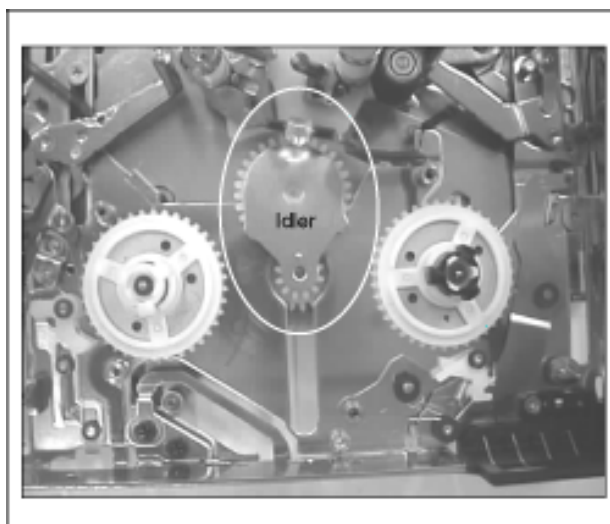


Fig. A18-2

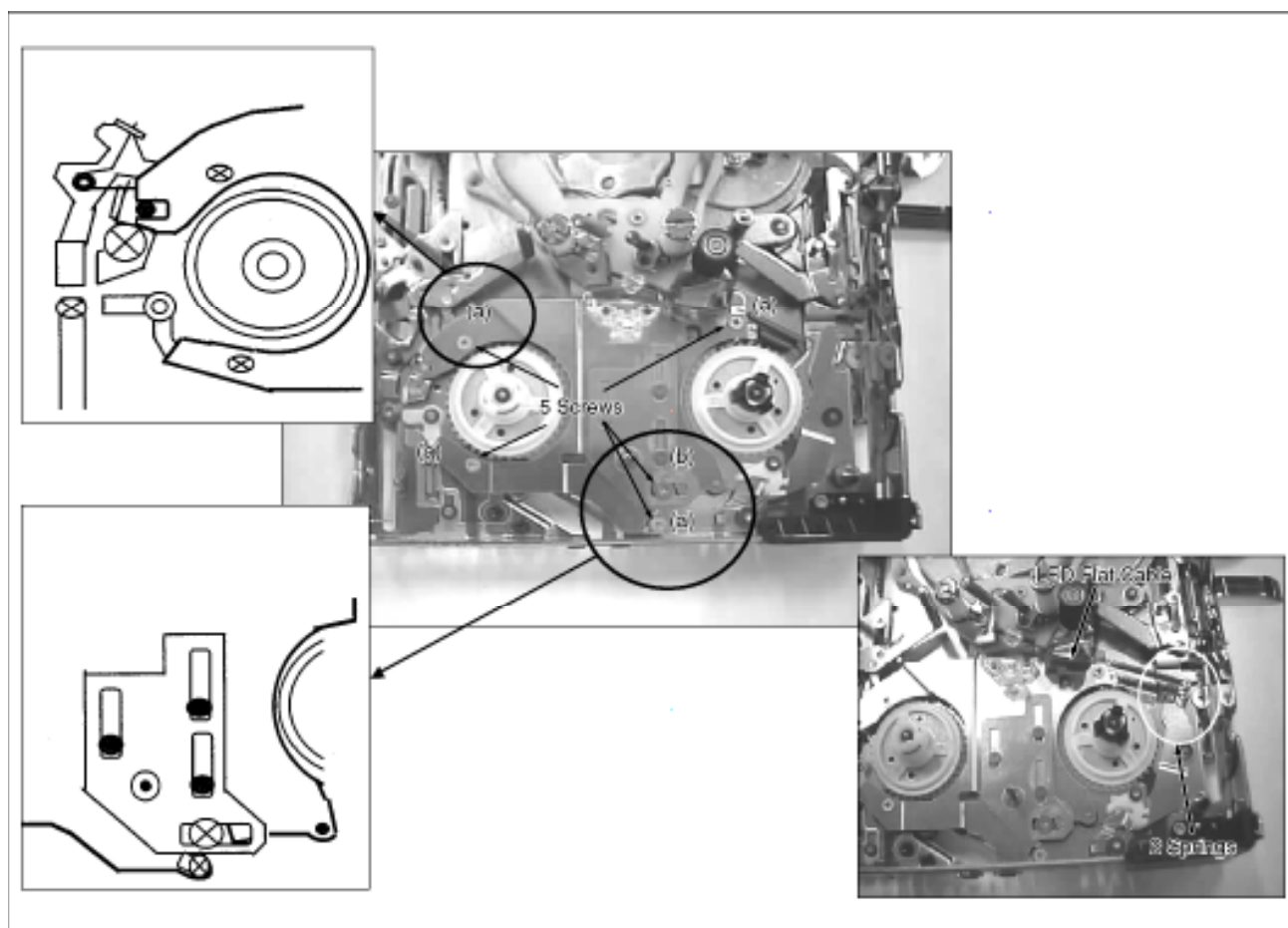


Fig. A18-3



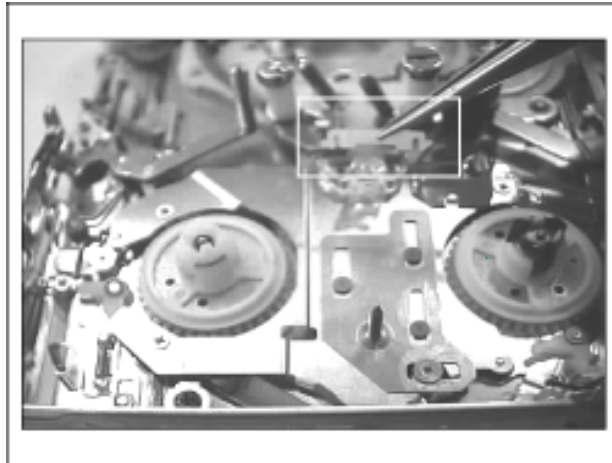


Fig. A19-1

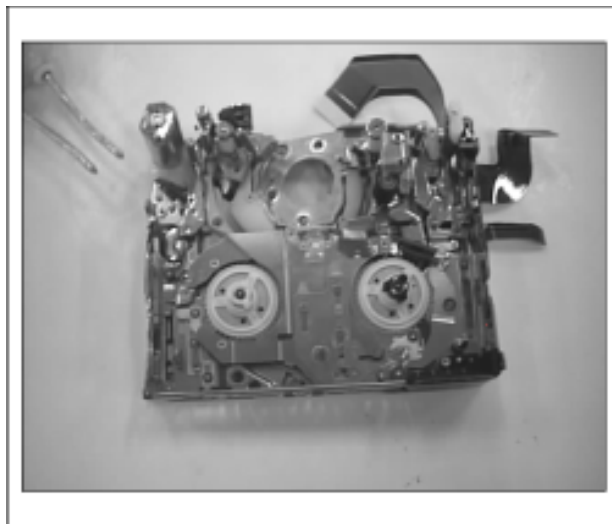


Fig. A19-2

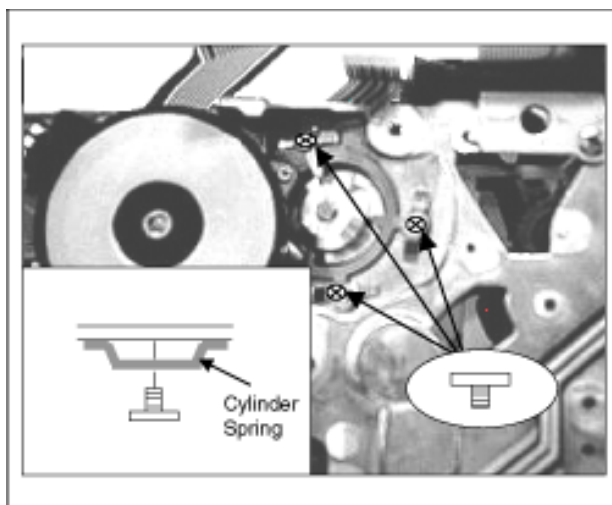




Fig. A19-3

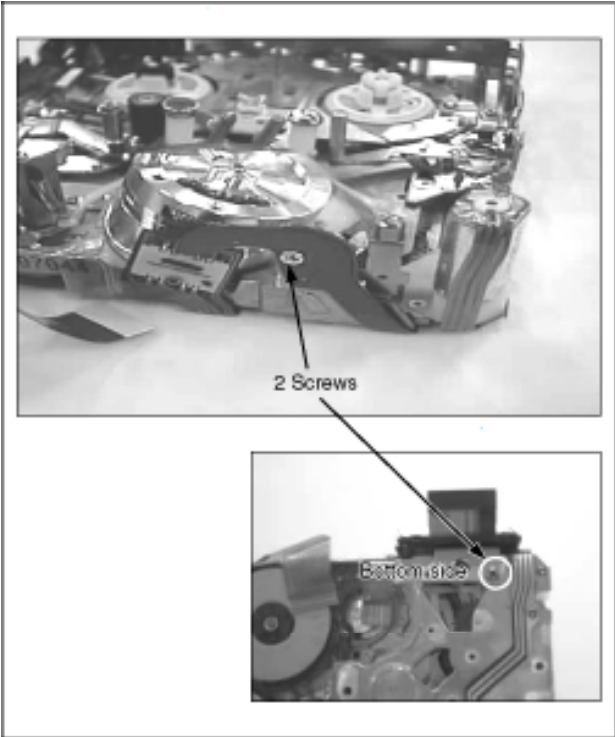


Fig. A20-1

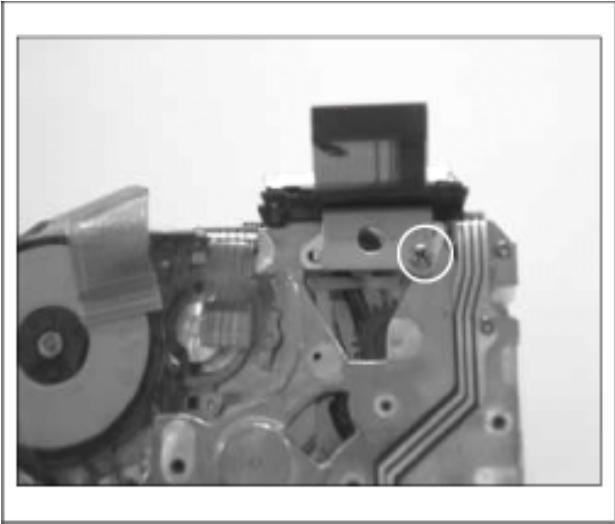


Fig. A20-2

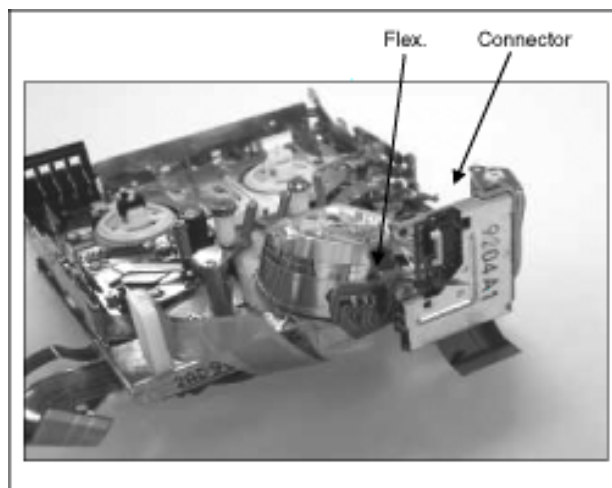


Fig. A20-3

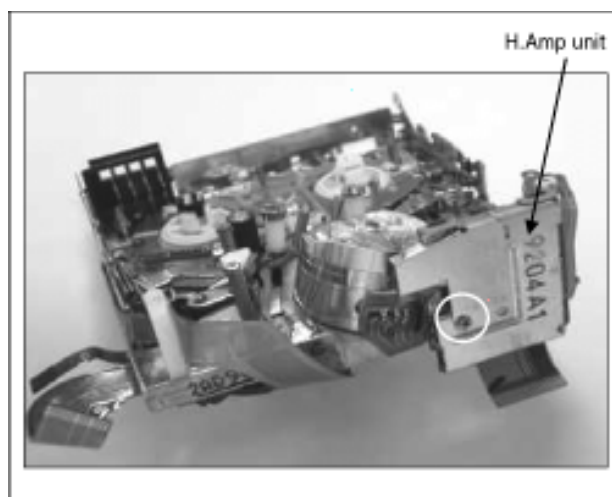


Fig. A21-1

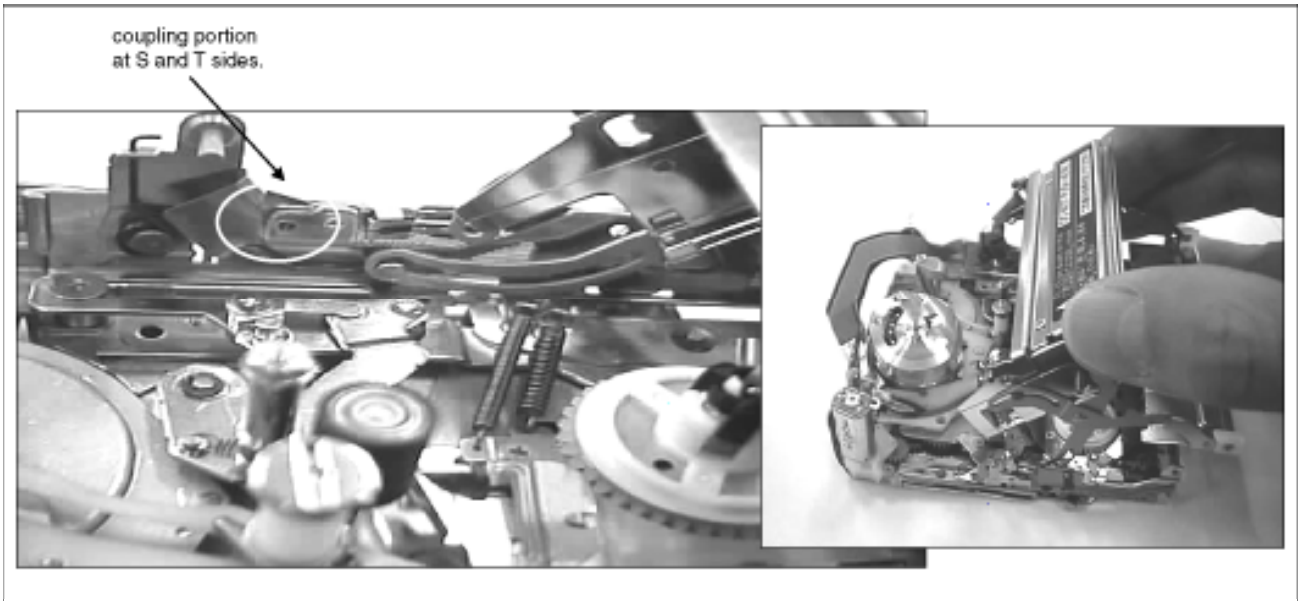


Fig. A21-2



[TOP](#) [PREVIOUS](#) [NEXT](#)

# 5.1 MECHANICAL ADJUST TABLE

[TOP](#) [PREVIOUS](#) [NEXT](#)

\* 1) H.Amp Unit is applied only Q1 & Q2 mechanism.

No.	Item	Confirmation of Tape Running	Linearity Adjustment	Confirmation of B.E.R. Value	Capstan tilt Adjustment	S3 Base adjustment	Sub Chassis Adjustment
1	MECHANISM CHASSIS	--	--	•	--	--	--
2	Cassette Up Unit.	--	--	--	--	--	--
*3	H Amp Unit.	--	--	•	--	--	--
4	Cylinder Unit	•	•	•	--	--	--
5	RT Flex. Flame.	--	--	--	--	--	--
6	LED Holder	--	--	--	--	--	--
7	Cover Plate	--	--	--	--	--	--
8	Idler U.	--	--	•	--	--	--
9	Sub Chassis Unit	•	•	•	--	--	•
10	Pinch Arm	•	•	•	--	--	--
11	Center Gear	--	--	•	--	--	--
12	Rail Unit	•	•	•	--	--	--
13	S-Loading Gear	--	--	•	--	--	--
14	T-Loading Gear	--	--	•	--	--	--
15	Gear Cover	--	--	•	--	--	--
16	Pinch Beetle	--	--	•	--	--	--
17	Release Beetle	--	--	•	--	--	--
18	Tension Lever	•	•	•	--	--	--
19	Eject Arm	--	--	--	--	--	--
20	Interface Gears	--	--	•	--	--	--
21	Cam Gear	--	--	•	--	--	--
22	Chassis Radon	--	--	--	--	--	--
23	Boat Radon	--	--	--	--	--	--
24	Drive Gear	--	--	•	--	--	--
25	Capstan Holder	--	--	--	--	--	--
26	Capstan Motor	•	•	•	•	--	--
27	Loading Motor Unit	--	--	--	--	--	--

28	Mechanism Interface Flex.	--	--	--	--	--	--
29	Mode Switch	--	--	--	--	--	--
30	Deceleration Gears	--	--	•	--	--	--
31	Tension Plate	•	•	•	--	--	--
32	T4 Guide	--	--	--	--	--	--
33	Eject Lever	--	--	--	--	--	--
34	Pulley Cover	--	--	--	--	--	--
35	Pulley	--	--	--	--	--	--
36	S3 Base U.	•	•	•	--	•	--

[TOP](#) [PREVIOUS](#) [NEXT](#)

# 5.2 MECHANICAL ADJUSTMENT PROCEDURE

[TOP](#) [PREVIOUS](#) [NEXT](#)

No.	Item	Equipment	Fig.	Procedure
1	Confirmation of Tape Running	1. Alignment Tape (PAL: VFM3110EDS/NTSC: VFM3010EDS) 2. Post Adjustment Driver(VFK1278)	<a href="#">Fig. AD1-1</a>	1) Confirm each post position in playback mode.
			<a href="#">Fig. AD1-2</a>	2) Confirm condition of tape regulation in playback & review mode.
2	Linearity Adjustment	1. Tatsujin system(Refer to Fig.)	<a href="#">Fig. AD2-1</a>	1) Set up Tatsujin System.
		2. Alignment Tape (PAL: VFM3110EDS/NTSC: VFM3010EDS)	<a href="#">Fig. AD2-2</a>	2) Connect Envelope Detector Board between Measuring Board & Oscilloscope.
		3. Envelope Detecor Board (VFK1641) 4. Post Adjustment Driver (VFK1278)	--	3) Remove Adjustment Cover. * Location for Adjustment Cover depends on Models.
			<a href="#">Fig. AD2-3</a>	4) Playback the Alignment Tape and adjust S2 & T3 posts by Screw Driver until wavefom becomes flat. After adjustment, B.E.R. should be confirmed by Electrical adjustment on the "Tatsujin".
3	Confirmation of B.E.R. Value	1. Tatsujin system(Refer to Fig.)	<a href="#">Fig. AD2-1</a>	1) Refer to Electrical Adjustment on the "Tatsujin".
4	Capstan tilt Adjustment	1. Capstan Tilt Adj. Jig(VFK1638) 2. Small Phillips Screw Driver	<a href="#">Fig. AD4-1</a>	1) Slide sensor pin to Capstan shaft. After touching,if OK, LED should be lit. * Do not touch when you confirm LED lit or not.
			<a href="#">Fig. AD4-2</a>	2) If Ng, Capstan tilt should be adjusted. a) Tighten screw (A) until LED is lit. b) Loose screw (B) until LED is not lit. c)Tightenscrew (A) anti-clockwise until LED is lit .
5	S3 Base adjustment	1. Post Adjustment Driver(VFK1278)	<a href="#">Fig. AD5-1</a>	1) Adjust S3 screw as Evvelope becomes flat.
			<a href="#">Fig. AD5-2</a>	2) Tighten a screw 180 degree as "ENV 1". 3) Loosen a screw as ENV 2. 4) Tighten a screw until ENV becomes flat as ENV 3 and tighten a screw 180 degree again.
6	Sub Chassis Adjustment	1. Small Phillips Screw Driver	<a href="#">Fig. AD6-1</a>	1) Make Review Position. * Set Loading mode and then,stop Pinch Roller & Capstan shaft is touched.

**Fig. AD6-2** 2) Loosen a screw.  
After fixing a shaky Sub Chassis, then  
tighten a screw.

Fig. AD1-1

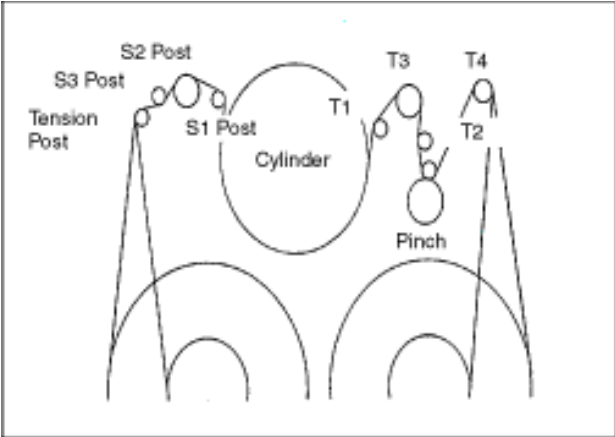


Fig. AD1-2

	PLAY	REV																				
S2	<table><tr><th>OK</th><th>NG</th></tr><tr><td> O</td><td> X</td></tr><tr><td> O</td><td> X</td></tr><tr><td> O</td><td> X</td></tr></table>	OK	NG	 O	 X	 O	 X	 O	 X	<table><tr><th>OK</th><th>NG</th></tr><tr><td> O</td><td> X</td></tr><tr><td> O</td><td> X</td></tr><tr><td> O</td><td> X</td></tr></table>	OK	NG	 O	 X	 O	 X	 O	 X				
OK	NG																					
 O	 X																					
 O	 X																					
 O	 X																					
OK	NG																					
 O	 X																					
 O	 X																					
 O	 X																					
T2	<table><tr><th>OK</th><th>NG</th></tr><tr><td> O</td><td> X</td></tr><tr><td> O</td><td> X</td></tr><tr><td> O</td><td> X</td></tr></table>	OK	NG	 O	 X	 O	 X	 O	 X	<table><tr><th>OK</th><th>NG</th></tr><tr><td> O</td><td> X</td></tr><tr><td> O</td><td> X</td></tr><tr><td> O</td><td> X</td></tr></table>	OK	NG	 O	 X	 O	 X	 O	 X				
OK	NG																					
 O	 X																					
 O	 X																					
 O	 X																					
OK	NG																					
 O	 X																					
 O	 X																					
 O	 X																					
T4	<table><tr><th>OK</th><th>NG</th></tr><tr><td> O</td><td> X</td></tr><tr><td> O</td><td> X</td></tr><tr><td> X</td><td> X</td></tr><tr><td> X</td><td> X</td></tr><tr><td> X</td><td> X</td></tr></table>	OK	NG	 O	 X	 O	 X	 X	 X	 X	 X	 X	 X	<table><tr><th>OK</th><th>NG</th></tr><tr><td> O</td><td> X</td></tr><tr><td> O</td><td> X</td></tr><tr><td> O</td><td> X</td></tr></table>	OK	NG	 O	 X	 O	 X	 O	 X
OK	NG																					
 O	 X																					
 O	 X																					
 X	 X																					
 X	 X																					
 X	 X																					
OK	NG																					
 O	 X																					
 O	 X																					
 O	 X																					

Fig. AD2-1

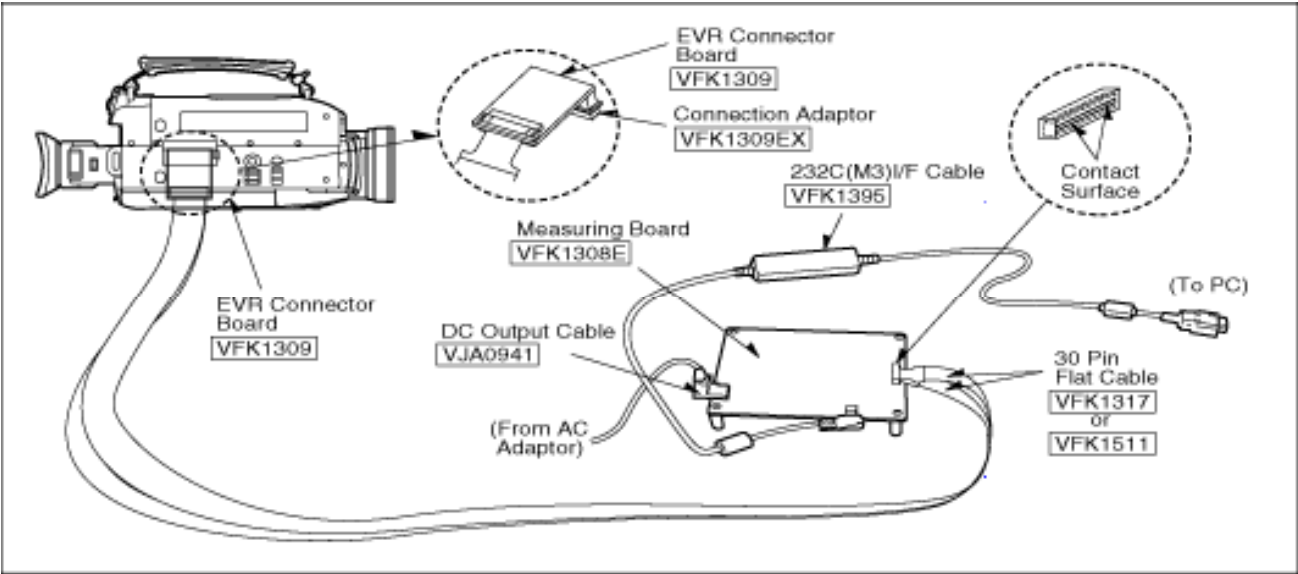


Fig. AD2-2

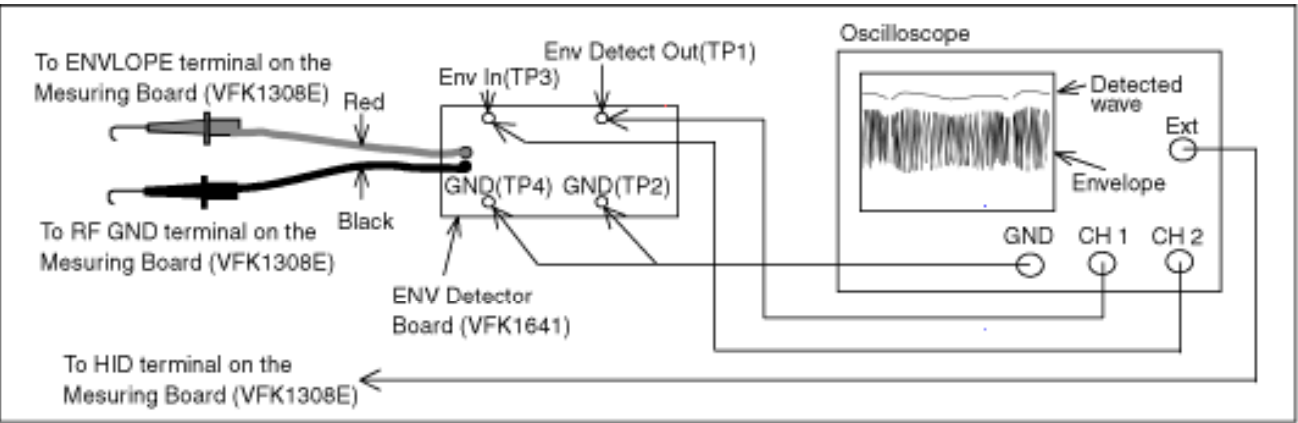


Fig. AD2-3

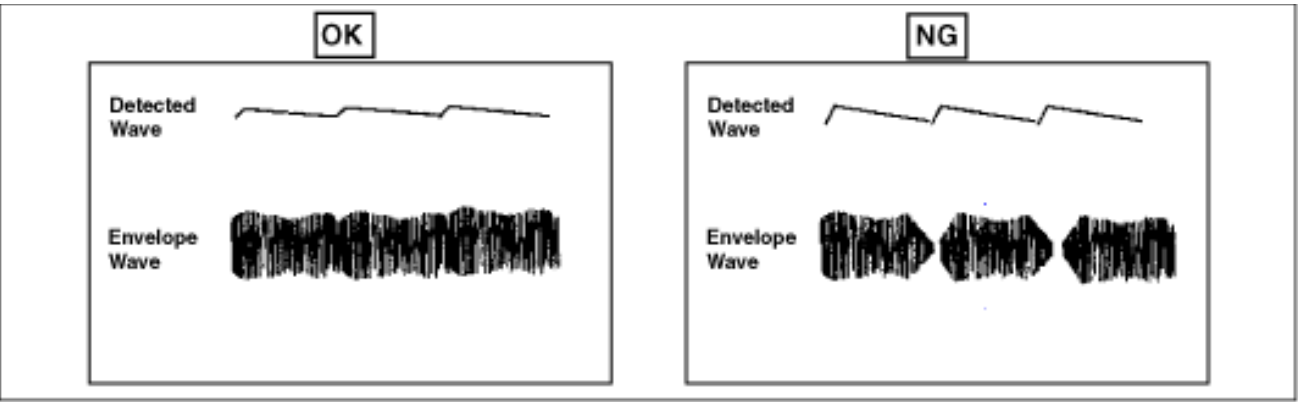


Fig. AD4-1





Fig. AD4-2

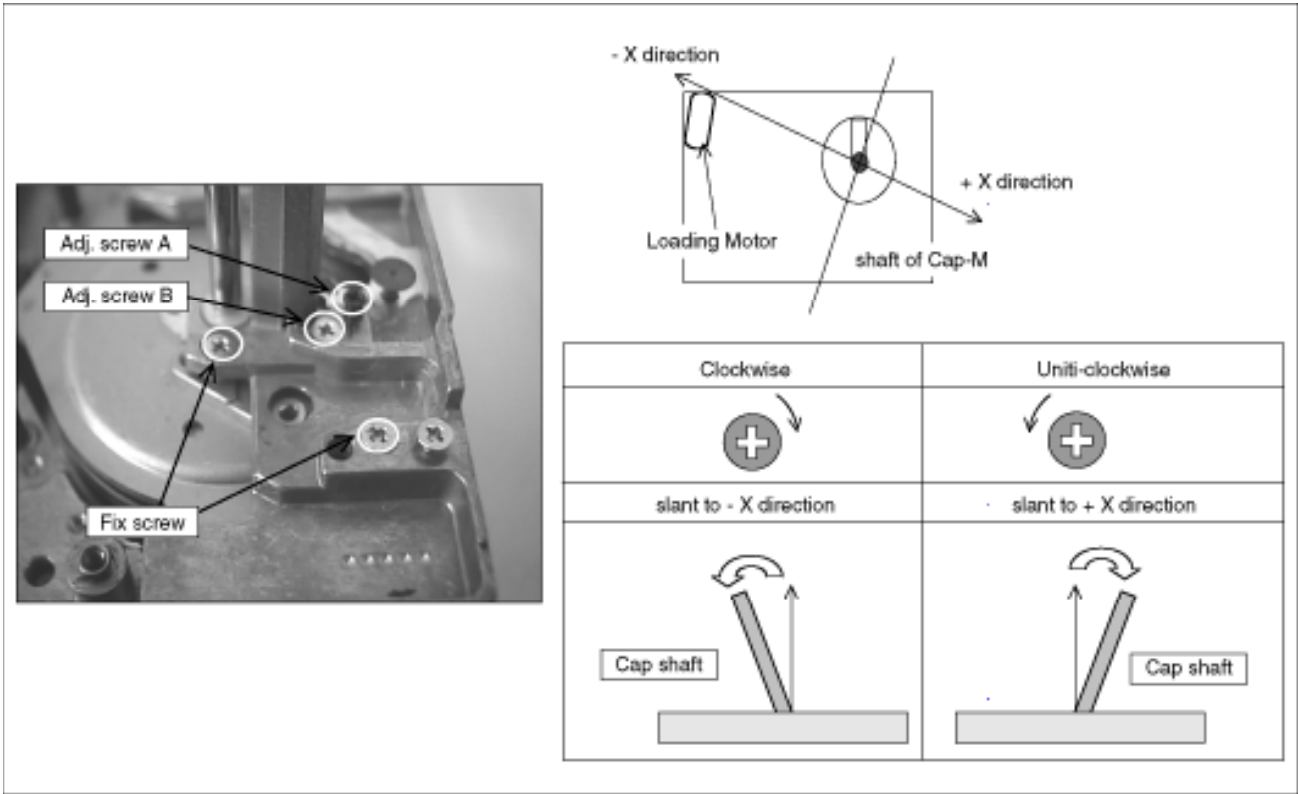


Fig. AD5-1

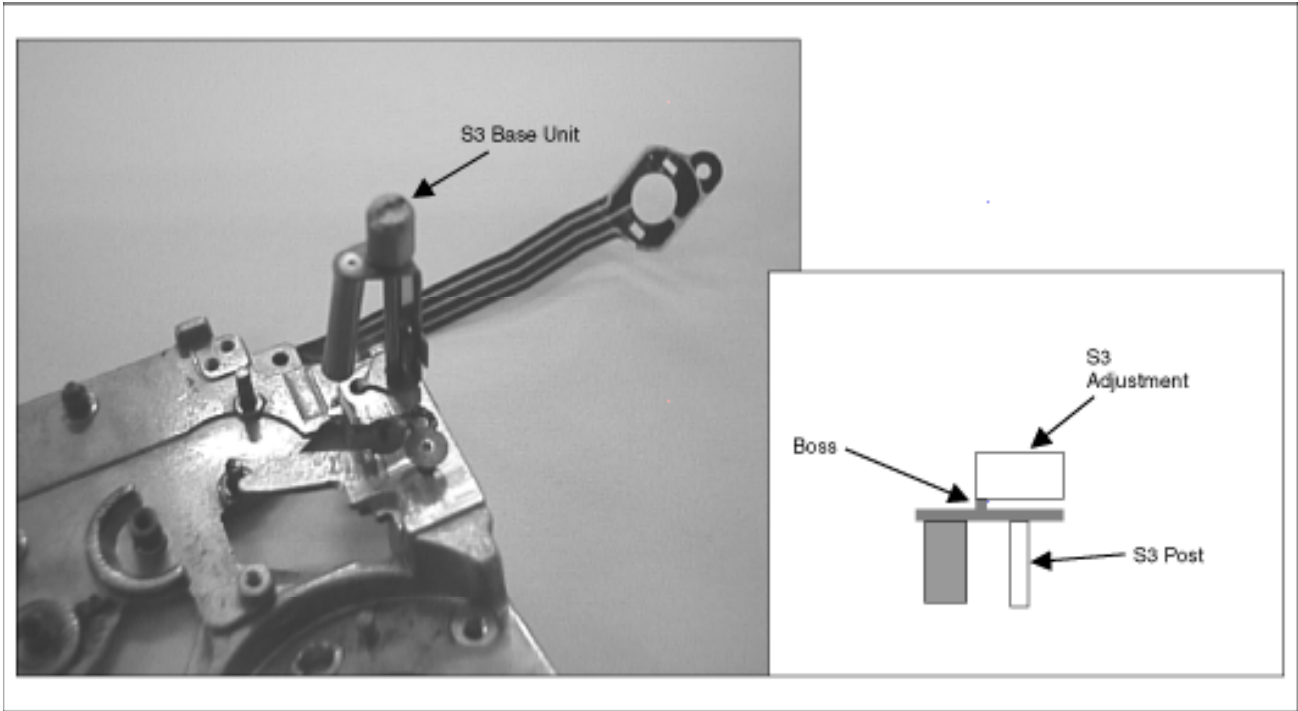


Fig. AD5-2

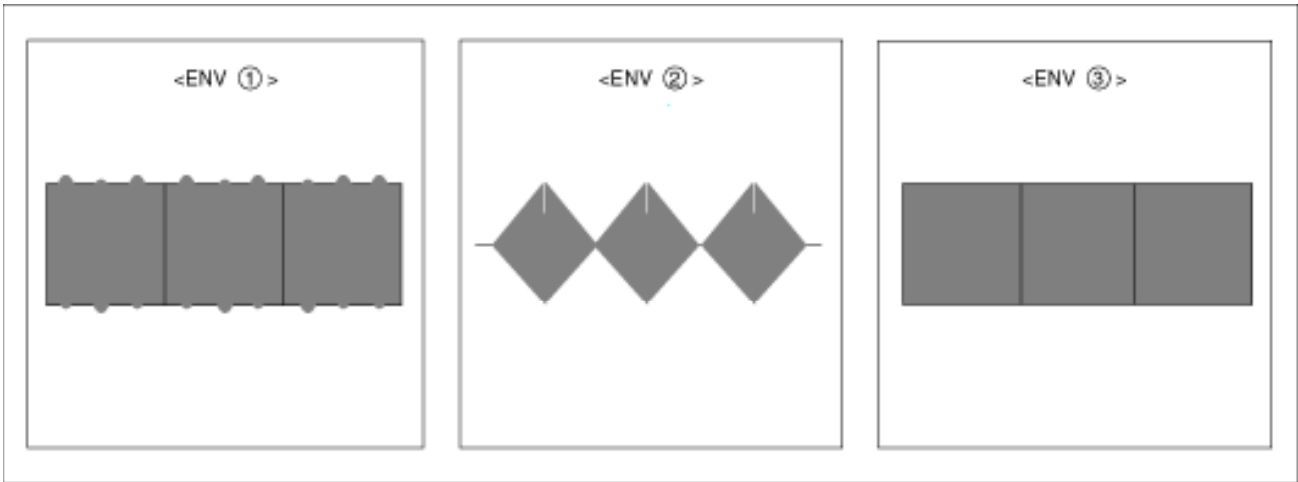


Fig. AD6-1

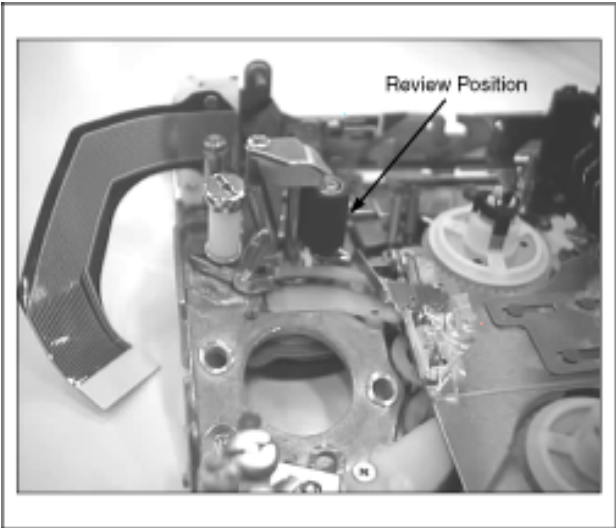
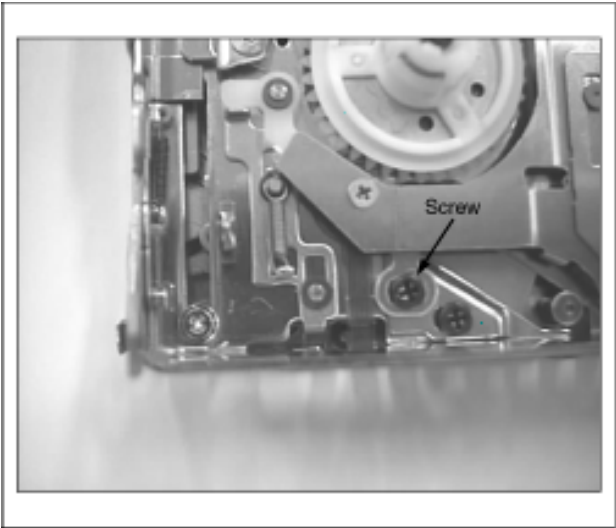


Fig. AD6-2



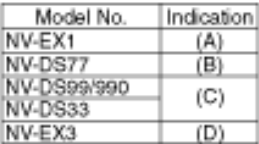
[TOP](#) [PREVIOUS](#) [NEXT](#)

# 6.1 Q1& Q2 VCR MECHANISM SECTON (1)

[TOP](#) [PREVIOUS](#) [NEXT](#)



[TOP](#) [PREVIOUS](#) [NEXT](#)

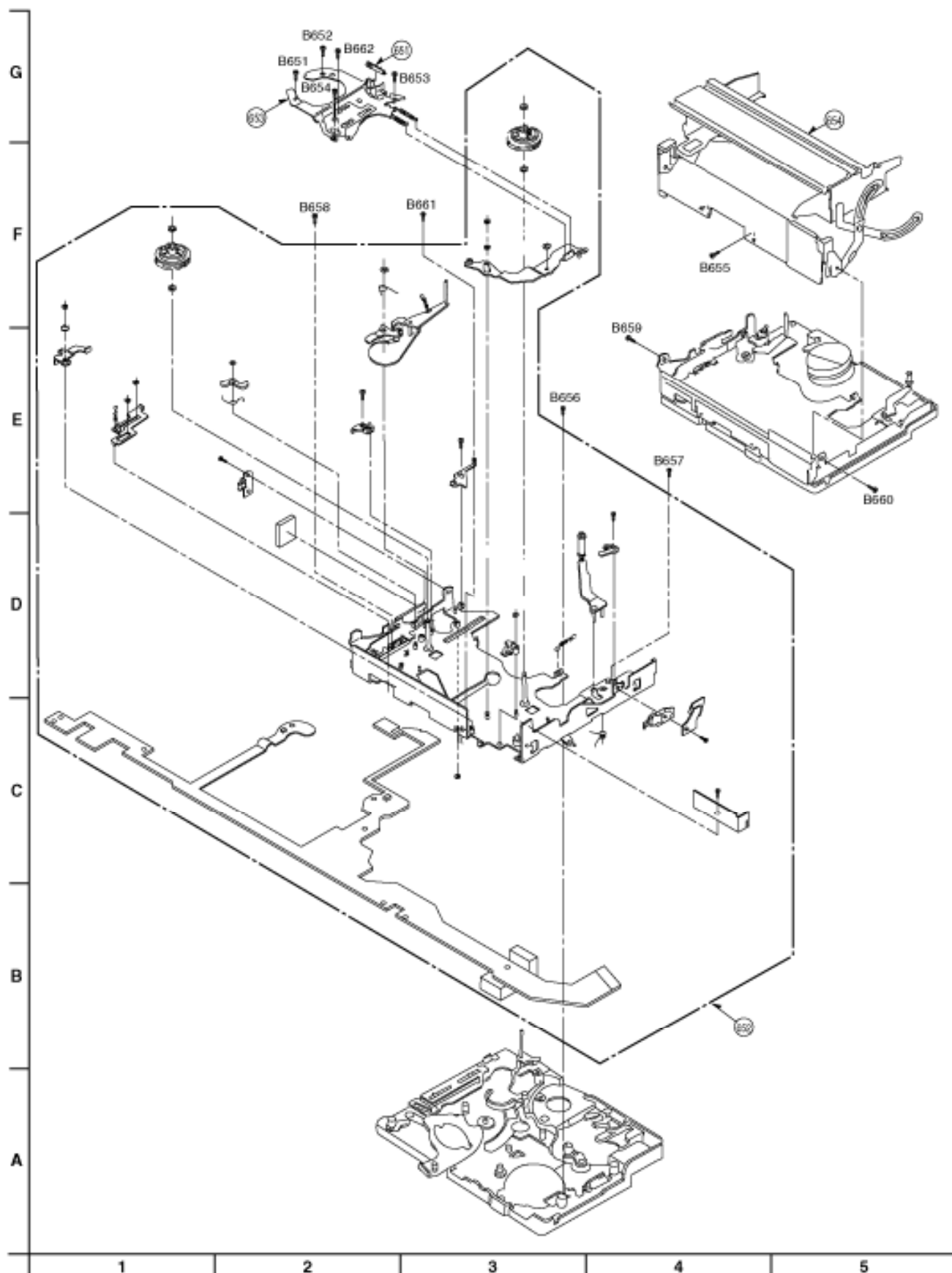


## 6.2 Q1& Q2 VCR MECHANISM SECTION (2)

[TOP](#) [PREVIOUS](#) [NEXT](#)



[TOP](#) [PREVIOUS](#) [NEXT](#)



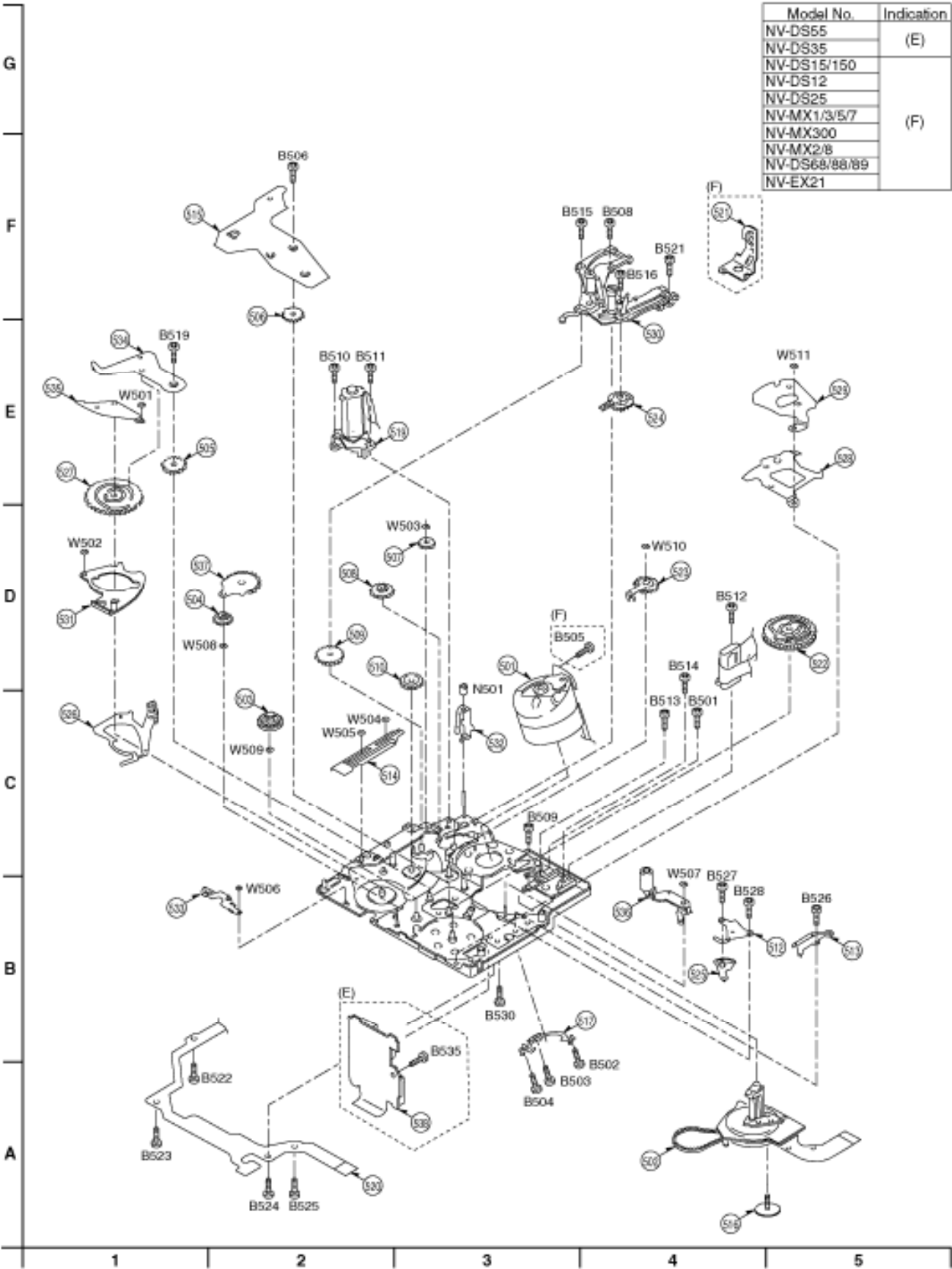
## 6.3 Q3 VCR MECHANISM SECTION (1)

[TOP](#) [PREVIOUS](#) [NEXT](#)



[TOP](#) [PREVIOUS](#) [NEXT](#)



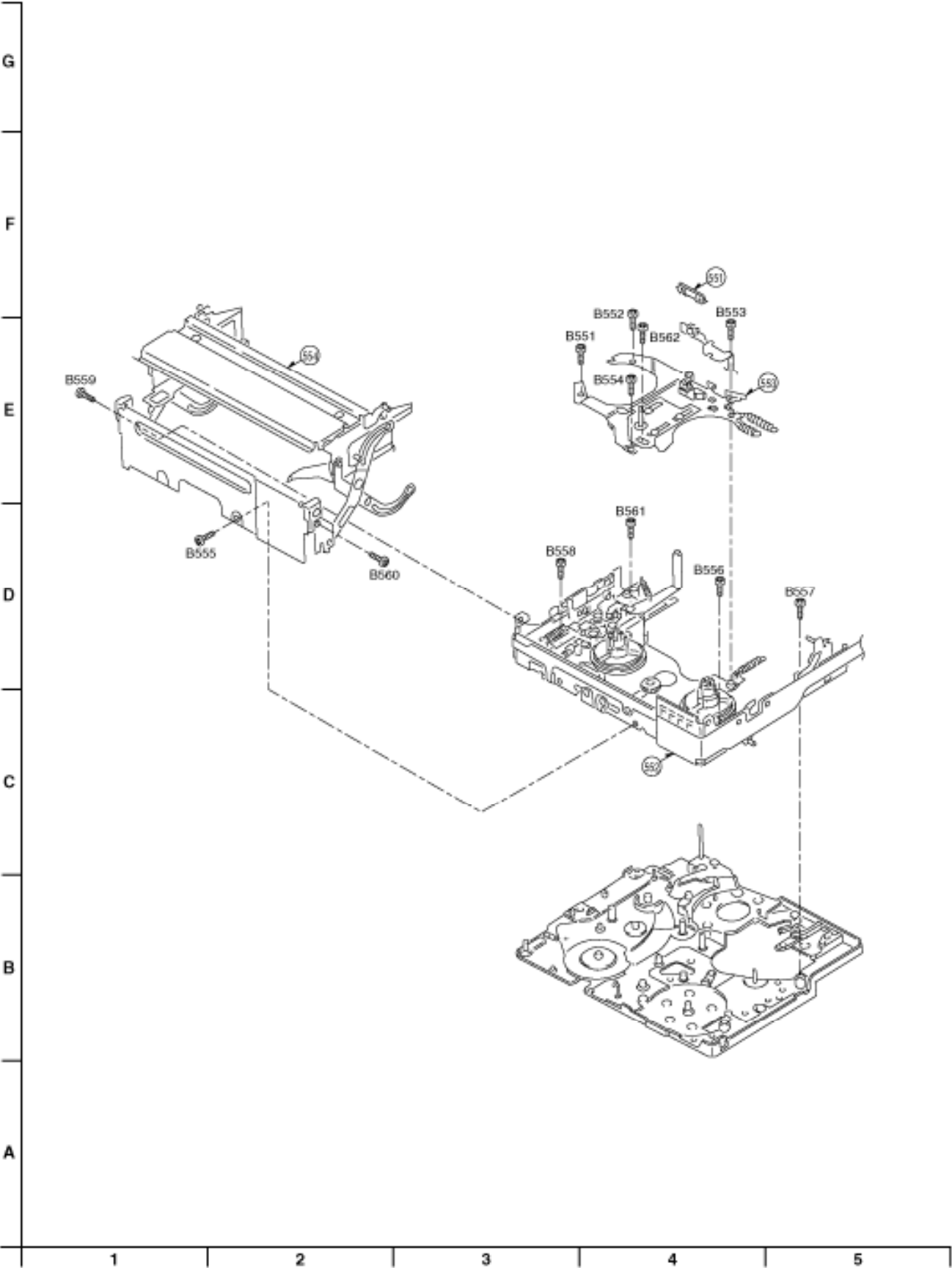


## 6.4 Q3 VCR MECHANISM SECTION (2)

[TOP](#) [PREVIOUS](#) [NEXT](#)



[TOP](#) [PREVIOUS](#) [NEXT](#)



# 7.1 Q1& Q2 VCR MECHANISM SECTION

## (1) PARTS LIST

[TOP](#) [PREVIOUS](#) [NEXT](#)

Note: 1. Be sure to make your orders of replacement parts according to this list.  
 2. IMPORTANT SAFETY NOTICE:  
 Components identified with the mark Δ, have the special characteristics for safety. When replacing any of these components, use only the same type.

Ref. No.	Part No.	Part Name & Description	Remarks
<a href="#">601</a>	VEG1495	CYLINDER U.	
<a href="#">602</a>	DFX25A7VWB	CAPSTAN U.	
<a href="#">603</a>	VDG1284	DRIVE GEAR	
<a href="#">604</a>	VDG1285	CENTER GEAR	
<a href="#">605</a>	VDG1290	INTERFACE GEAR (C)	
<a href="#">606</a>	VDG1291	INTERFACE GEAR (D)	
<a href="#">607</a>	VDG1295	DECELERATION (A)	NV-EX1,NV-DS77
607	VDG1330	DECELERATION (A)	NV-DS99/990,NV-DS33,NV-EX3
608	VDG1296	DECELERATION (B)	NV-EX1,NV-DS77
<a href="#">608</a>	VDG1331	DECELERATION (B)	NV-DS99/990,NV-DS33,NV-EX3
<a href="#">609</a>	VDG1297	INTERFACE GEAR (A)	
<a href="#">610</a>	VDG1303-A	INTERFACE GEAR (B)	
<a href="#">612</a>	VMA9908	PULLEY COVER	
<a href="#">613</a>	VMA9916	T4 GUIDE	
<a href="#">614</a>	VMA9917	TENSION PLATE	
<a href="#">615</a>	VMA0E52	GEAR COVER	
<a href="#">616</a>	VHD1430	CAPSTAN HOLDER	NV-EX3
<a href="#">617</a>	VMC1443	CYLINDER SPRING	
<a href="#">618</a>	L6DA8DKC0001	LOADING MOTOR U.	NV-EX1,NV-DS77
<a href="#">619</a>	VEM0679	LOADING MOTOR U.	NV-DS99/990,NV-DS33,NV-EX3
<a href="#">620</a>	VWJ1297	MECHANISM INTERFACE FLEX.	NV-DS99/990,NV-DS33,NV-EX3
<a href="#">622</a>	K0ZZ00000453	MODE SWITCH	
<a href="#">623</a>	VXA6124	S LOAD GEAR U.	
<a href="#">624</a>	VXA6125	T LOAD GEAR U.	

<a href="#">625</a>	VXA6133	PULLEY COVER	
<a href="#">626</a>	VXA6134	CHASSIS RADON U.	
<a href="#">627</a>	VXA6135	CAM GEAR U.	
<a href="#">628</a>	VXA6136	PINCH BEETLE	
<a href="#">629</a>	VXA6137	RELEASE BEETLE	
<a href="#">630</a>	VXA6138	RAIL U.	
<a href="#">631</a>	VXA6169	BOAT RADON U.	
<a href="#">632</a>	VXA6184	S3 BASE U.	
<a href="#">633</a>	VXL2814	EJECT LEVER U.	
<a href="#">634</a>	VXL2815	TENSION LEVER U.	
<a href="#">635</a>	VXL2816	EJECT ARM U.	
<a href="#">636</a>	VXL2897	PINCH ARM U.	
<a href="#">637</a>	VXL2818	IDLER U.	
<a href="#">638</a>	VYK8485	HEAD AMP U.	NV-EX1
638	VYK8244	HEAD AMP U.	NV-DS77
638	VYK8886	HEAD AMP U.	NV-DS99/990,NV-DS33
638	VYK9102	HEAD AMP U.	NV-EX3
<a href="#">621</a>	VSC4802	SHIELD CASE	NV-EX1
621	VSC4758	SHIELD CASE	NV-DS77,NV-DS99/990,NV-DS33
<a href="#">639</a>	VMA9926	CAPSTAN HOLDER	NV-EX1,NV-DS77,NV-DS99/990,NV-DS33
<a href="#">B601</a>	VHD1155	SCREW	
<a href="#">B602</a>	VHD1372	SCREW	
<a href="#">B603</a>	VHD1372	SCREW	
<a href="#">B604</a>	VHD1372	SCREW	
<a href="#">B606</a>	VHD1160	SCREW	
<a href="#">B608</a>	VHD1160	SCREW	
<a href="#">B609</a>	VHD1406	SCREW	
<a href="#">B610</a>	VHD1161	SCREW	
<a href="#">B611</a>	VHD1161	SCREW	
<a href="#">B612</a>	VHD1161	SCREW	
<a href="#">B613</a>	VHD1161	SCREW	
<a href="#">B614</a>	VHD1161	SCREW	

<a href="#">B615</a>	VHD1162	SCREW	
<a href="#">B616</a>	VHD1162	SCREW	
<a href="#">B619</a>	VHD1163	SCREW	
<a href="#">B621</a>	XQN12+B1	SCREW	
<a href="#">B622</a>	XQN12+A1	SCREW	
<a href="#">B623</a>	XQN12+A1	SCREW	
<a href="#">B624</a>	XQN12+A1	SCREW	
<a href="#">B625</a>	XQN12+A1	SCREW	
<a href="#">B626</a>	XQN12+A1	SCREW	
<a href="#">B627</a>	XQN12+A12FN	SCREW	
<a href="#">B628</a>	XQN12+A12FN	SCREW	
<a href="#">B631</a>	XQN12+B2	SCREW	
<a href="#">B632</a>	VHD1162	SCREW	NV-EX1,NV-DS77,NV-DS99/990,NV-DS33
<a href="#">B633</a>	VHD1162	SCREW	NV-EX1,NV-DS77,NV-DS99/990,NV-DS33
<a href="#">B634</a>	XQN16+B12	SCREW	NV-EX1,NV-DS77,NV-DS99/990,NV-DS33
<a href="#">N601</a>	VHN0324	NUT	
<a href="#">W601</a>	VMX2028	WASHER	
<a href="#">W602</a>	VMX2751	WASHER	
<a href="#">W603</a>	VMX2752	WASHER	
<a href="#">W604</a>	VMX2392	WASHER	
<a href="#">W605</a>	VMX2028	WASHER	
<a href="#">W606</a>	VMX2028	WASHER	
<a href="#">W607</a>	VMX2028	WASHER	
<a href="#">W608</a>	VMX2028	WASHER	
<a href="#">W609</a>	VMX2028	WASHER	
<a href="#">W610</a>	VMX2028	WASHER	
<a href="#">W611</a>	VMX2028	WASHER	

[TOP](#) [PREVIOUS](#) [NEXT](#)

# 7.2 Q1& Q2 VCR MECHANISM SECTION

## (2) PARTS LIST

[TOP](#) [PREVIOUS](#) [NEXT](#)

Note: 1. Be sure to make your orders of replacement parts according to this list.  
 2. IMPORTANT SAFETY NOTICE:  
 Components identified with the mark Δ, have the special characteristics for safety. When replacing any of these components, use only the same type.

Ref. No.	Part No.	Part Name & Description	Remarks
<a href="#">651</a>	VMD2975	LED HOLDER	
<a href="#">652</a>	VXA6537	SUB SHASSIS U.	NV-DS99/990,NV-DS33,NV-EX3
652	VXA6146	SUB SHASSIS U.	NV-EX1,NV-DS77
<a href="#">653</a>	VXA6151	COVER PLATE U.	
<a href="#">654</a>	VXA6159	CASSETTE UP U.	
<a href="#">B651</a>	VHD1162	SCREW	
<a href="#">B652</a>	VHD1162	SCREW	
<a href="#">B653</a>	VHD1162	SCREW	
<a href="#">B654</a>	VHD1162	SCREW	
<a href="#">B655</a>	VHD1207	SCREW	
<a href="#">B656</a>	VHD1164	SCREW	
<a href="#">B657</a>	VHD1164	SCREW	
<a href="#">B658</a>	VHD1171	SCREW	
<a href="#">B659</a>	VHD1314	SCREW	
<a href="#">B660</a>	VHD1314	SCREW	
<a href="#">B661</a>	VHD1163	SCREW	
<a href="#">B662</a>	VHD1163	SCREW	

[TOP](#) [PREVIOUS](#) [NEXT](#)

# 7.3 Q3 VCR MECHANISM SECTION (1)

## PARTS LIST

[TOP](#) [PREVIOUS](#) [NEXT](#)

Note: 1. Be sure to make your orders of replacement parts according to this list.  
2. IMPORTANT SAFETY NOTICE:  
Components identified with the mark  $\Delta$ , have the special characteristics for safety. When replacing any of these components, use only the same type.

Ref. No.	Part No.	Part Name & Description	Remarks
<a href="#">501</a>	VEG1570	CYLINDER U.	NV-EX21,NV-DS68/88/89/25/12/15/150,NV-MX2/8/300/1/3/5/7
501	VEG1495	CYLINDER U.	NV-DS35/55
<a href="#">502</a>	DFX25A7VWC	CAPSTAN U.	NV-EX21,NV-DS68/88/89/25/12/15/150,NV-MX2/8/300/1/3/5/7
502	DFX25A7VWB	CAPSTAN U.	NV-DS35/55
<a href="#">503</a>	VDG1284	DRIVE GEAR	
<a href="#">504</a>	VDG1285	CENTER GEAR	
<a href="#">505</a>	VDG1290	INTERFACE GEAR (C)	
<a href="#">506</a>	VDG1291	INTERFACE GEAR (D)	
<a href="#">507</a>	VDG1330	DECELERATION GEAR (A)	
<a href="#">508</a>	VDG1331	DECELERATION GEAR (B)	
<a href="#">509</a>	VDG1297	INTERFACE GEAR (A)	
<a href="#">510</a>	VDG1303	INTERFACE GEAR (B)	
<a href="#">512</a>	VMA9908	PULLEY COVER	
<a href="#">513</a>	VMA9916	T4 GUIDE	
<a href="#">514</a>	VMA9917	TENSION PLATE	
<a href="#">515</a>	VMA0E52	GEAR COVER	
<a href="#">516</a>	VHD1430	CAPSTAN HOLDER	
<a href="#">517</a>	VMC1443	CYLINDER SPRING	
<a href="#">519</a>	VEM0679	LOADING MOTOR U.	
<a href="#">520</a>	VWJ1297	MECHANISM INTERFACE FLEX.	
<a href="#">521</a>	VMP6271	RT FLEX. FRAME	NV-EX21,NV-DS68/88/89/25/12/15/150,NV-MX2/8/300/1/3/5/7
<a href="#">522</a>	K0ZZ00000453	MODE SWITCH	
<a href="#">523</a>	VXA6124	S LOAD GEAR U.	
<a href="#">524</a>	VXA6125	T LOAD GEAR U.	



<a href="#">525</a>	VXA6133	PULLEY	
<a href="#">526</a>	VXA6134	CHASSIS RADON U.	
<a href="#">527</a>	VXA6135	CAM GEAR U.	
<a href="#">528</a>	VXA6136	PINCH BEETLE	
<a href="#">529</a>	VXA6137	RELEASE BEETLE	
<a href="#">530</a>	VXA6138	RAIL U.	
<a href="#">531</a>	VXA6169	BOAT RADON U.	
<a href="#">532</a>	VXA6184	S3 BASE U.	
<a href="#">533</a>	VXL2814	EJECT LEVER U.	
<a href="#">534</a>	VXL2815	TENSION LEVER U.	
<a href="#">535</a>	VXL2816	EJECT ARM U.	
<a href="#">536</a>	VXL2897	PINCH ARM U.	
<a href="#">537</a>	VXL2818	IDLER U.	
<a href="#">538</a>	VYK8886	HEAD AMP U.	NV-DS35/55
<a href="#">B501</a>	VHD1155	SCREW	
<a href="#">B502</a>	VHD1372	SCREW	
<a href="#">B503</a>	VHD1372	SCREW	
<a href="#">B504</a>	VHD1372	SCREW	
<a href="#">B505</a>	XQN14+B1FN	SCREW	NV-EX21,NV-DS68/88/89/25/12/15/150,NV-MX2/8/300/1/3/5/7
<a href="#">B506</a>	VHD1160	SCREW	
<a href="#">B508</a>	VHD1160	SCREW	
<a href="#">B509</a>	VHD1406	SCREW	
<a href="#">B510</a>	VHD1161	SCREW	
<a href="#">B511</a>	VHD1161	SCREW	
<a href="#">B512</a>	VHD1161	SCREW	
<a href="#">B513</a>	VHD1161	SCREW	
<a href="#">B514</a>	VHD1161	SCREW	
<a href="#">B515</a>	VHD1162	SCREW	
<a href="#">B516</a>	VHD1162	SCREW	
<a href="#">B519</a>	VHD1163	SCREW	
<a href="#">B521</a>	XQN12+B1	SCREW	
<a href="#">B522</a>	XQN12+A1	SCREW	

<a href="#">B523</a>	XQN12+A1	SCREW	
<a href="#">B524</a>	XQN12+A1	SCREW	
<a href="#">B525</a>	XQN12+A1	SCREW	
<a href="#">B526</a>	XQN12+A1	SCREW	
<a href="#">B527</a>	XQN12+A12FN	SCREW	
<a href="#">B528</a>	XQN12+A12FN	SCREW	
<a href="#">B530</a>	XQN16+B2	SCREW	
<a href="#">B535</a>	XQN16+B3	SCREW	NV-DS35/55
<a href="#">N501</a>	VHN0324	NUT	
<a href="#">W501</a>	VMX2028	WASHER	
<a href="#">W502</a>	VMX2028	WASHER	
<a href="#">W503</a>	VMX2028	WASHER	
<a href="#">W504</a>	VMX2028	WASHER	
<a href="#">W505</a>	VMX2028	WASHER	
<a href="#">W506</a>	VMX2028	WASHER	
<a href="#">W507</a>	VMX2028	WASHER	
<a href="#">W508</a>	VMX2751	WASHER	
<a href="#">W509</a>	VMX2752	WASHER	
<a href="#">W510</a>	VMX2392	WASHER	
<a href="#">W511</a>	VMX2028	WASHER	

[TOP](#) [PREVIOUS](#) [NEXT](#)

# 7.4 Q3 VCR MECHANISM SECTION (2)

## PARTS LIST

[TOP](#) [PREVIOUS](#)

Note: 1. Be sure to make your orders of replacement parts according to this list.  
2. IMPORTANT SAFETY NOTICE:  
Components identified with the mark Δ, have the special characteristics for safety. When replacing any of these components, use only the same type.

Ref. No.	Part No.	Part Name & Description	Remarks
<a href="#">551</a>	VMD2975	LED HOLDER	
<a href="#">552</a>	VXA6537	SUB CHASSIS U.	
<a href="#">553</a>	VXA6151	COVER PLATE U.	
<a href="#">554</a>	VXA6159	CASSETTE UP U.	
<a href="#">B551</a>	VHD1162	SCREW	
<a href="#">B552</a>	VHD1162	SCREW	
<a href="#">B553</a>	VHD1162	SCREW	
<a href="#">B554</a>	VHD1162	SCREW	
<a href="#">B555</a>	VHD1207	SCREW	
<a href="#">B556</a>	VHD1164	SCREW	
<a href="#">B557</a>	VHD1164	SCREW	
<a href="#">B558</a>	VHD1171	SCREW	
<a href="#">B559</a>	VHD1314	SCREW	
<a href="#">B560</a>	VHD1314	SCREW	
<a href="#">B561</a>	VHD1163	SCREW	
<a href="#">B562</a>	VHD1163	SCREW	

[TOP](#) [PREVIOUS](#)